CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Admiral	228DX16, 17 (Ch. 23A1 Run 3) Tel. Rec.	211-2
Aircastle	652.487S	211-3
CBS Columbia	540, 541	211-4
Coronado	35TV2-43-9045D, 35TV2-43-9060C Tel. Rec. Prod. Chg. Bul. 71	211-1
Crosley	Kit Part No. 154927 UHF Conv.	211-5
Emerson	716F, 717F, 719F, 727D, 741D, 751D (Ch. 120168-D) Tel. Rec. Prod. Chg. Bul. 71	211-1
General Electric	412F, 414F, 415F, 416F	211-6
Hallicrafters	1050, A (Ch. AL1200D), 1072, 4, 5, 8 (Ch. AG1200D), 1072A, 1074A, 1075A, 1078A (Ch. AR1200D, Run 1), 1074AT, 1075AT, 1078AT (Ch. AY1200D), 1077 (Ch. AH1200D), 1081, A, 1085, A, 1088, A (Ch. AJ1200D) Tel. Rec.	211-7
Hoffman	21M903, 21B904, 21P905 (Ch. 213 or 213M) Tel. Rec.	211-8
Masco	MB-125	211-9
Rauland	BAU21	211-10
Roland	8XF1, 8XF2	211-11
Sentinel	1U-344, 344	211-12
Silvertone	2003, 2004, 2005, 2006 (Ch. 757.110)	211-13
Steelman	3D2	211-14
Stewart-Warner	27C-9212A (Series A, B, C) Tel. Rec.	211-15
Truetone	D2270	211-16
Westinghouse	H-378T5, H-379T5, H-380T5, H-381T5 (Ch. V-2184-1)	211-17

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 190

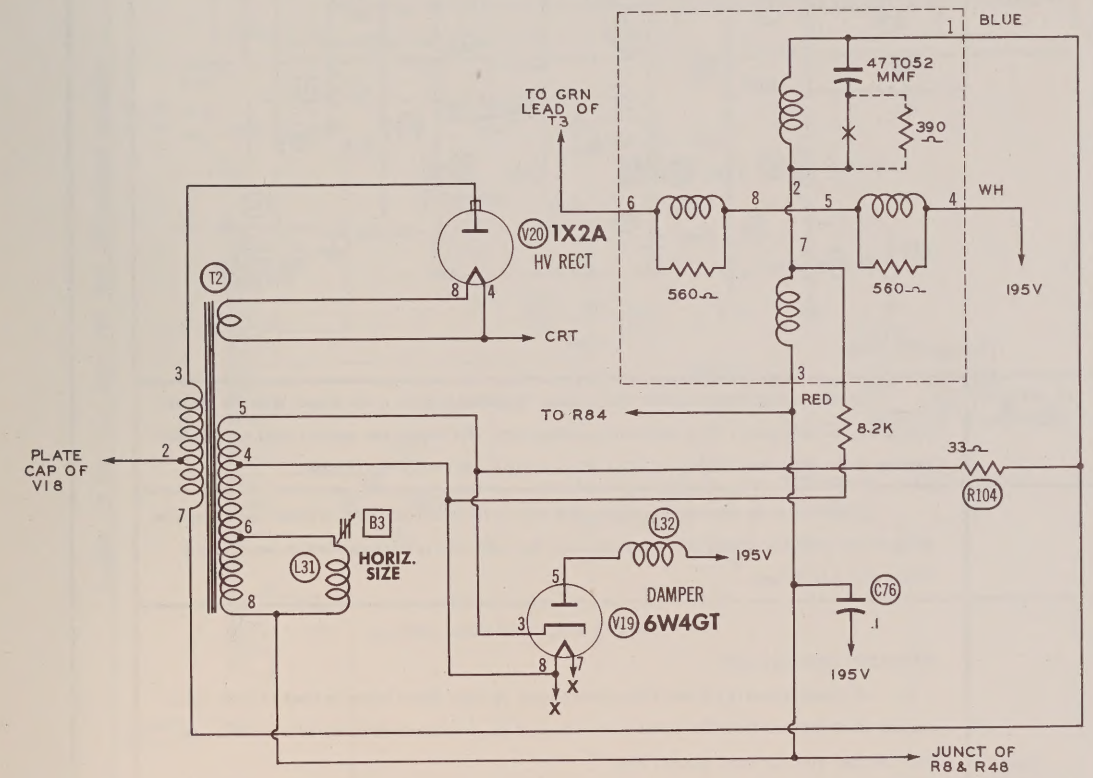
Ch.120168-D

Emerson Models 716F, 717F, 719F and 727D (Ch. 120168-D) were added with Production Change Bulletin 61, Set 195-1. Refer to this bulletin for circuit differences between Ch. 120168-D and Ch. 120163-D. Two new Models have been added which also use Ch. 120168-D. They are 741D and 751D.

In later production the following Production Changes were incorporated in Ch. 120168-D. These changes should be made if sets are encountered in the field which were not changed in production and similiar symptoms exist.

Ch.120168-D Coded A

In chassis coded triagle A, an 8200Ω, 1 W. resistor was added from terminal 4 of the horizontal output transformer (T2) to terminal 7 of the deflection yoke (T4). The addition of this resistor makes the value of the anti-ringing capacitor less critical, Values ranging from 38MMF to 62MMF have been used in this application, however, it is recommended that for replacement purposes a value from 47 to 52MMF be used. A partial schematic of this circuit is given below.



Ch.120168-D Coded B

In order to make the vertical hold setting less critical in fringe areas, the 100Ω vertical multivibrator grid resistor, which is shown in Production Change Bulletin 61, Set 195-1, was changed to 150Ω in chassis coded triangle B.

Ch.120168-D Coded C

In chassis coded triangle C the 1000Ω cathode resistor for the horizontal multivibrator which is shown in Production Change Bulletin 61, Set 195-1, was changed to an 820Ω, ±5%, resistor. This change was made to improve the stability of the circuit due to variations in 6SN7 tubes.

EMERSON MODELS 716F, 717F, 719F, 727D, 741D, 751D (Ch. 120168-D)

PRODUCTION CHANGES
BULLETIN 71

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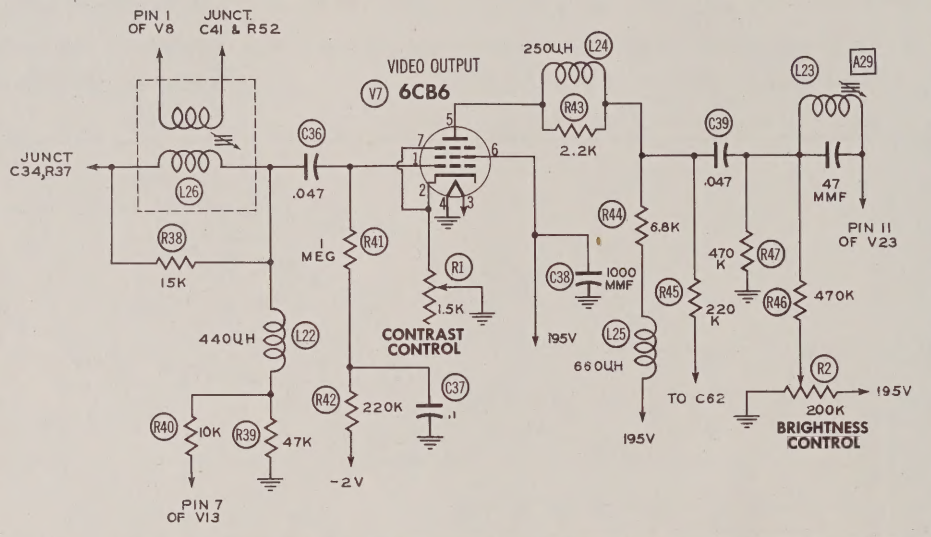
Ch. 120168-D Coded △D

To reduce hiss in fringe areas a .001MFD capacitor was added from the plate (pin 7) of V11 (6AV6, AF Amp.) to ground in chassis coded triangle D .

Ch.120168-D Coded △E

The 4.5MC trap (L23) was moved to the plate circuit of V7 in chassis coded triangle E . This change was made to improve the audio sensitivity and to increase the 4.5MC rejection in the video. A partial schematic showing the new location is given below. In sets using the trap in this position the following procedure should be followed in aligning the trap.

1. Connect a signal generator, set at 4.5MC, through a .01MFD capacitor to the grid (pin 1) of the video amplifier (V7).
2. Set the contrast control for maximum contrast (fully clockwise).
3. Connect the high side of a VTVM, set on a DC scale, through an RF probe to the cathode of the picture tube (pin 11). Connect the low side to chassis.
4. Adjust the 4.5MC trap (L23) for MINIMUM reading on the VTVM.



Ch.120168-D Coded △F

In chassis coded triangle F a 100Ω resistor was added in place of the jumper from the screen (pin 4) and the plate (pin 3) of the 6W6 vertical output tube. This change was made in order to eliminate popping in the audio when the picture rolled or the vertical hold control was adjusted.

In addition to the above, in some tuners, R12 may be changed from 330KΩ to 270KΩ and R13 may be changed from 180KΩ to 150KΩ. Since approximately the same ratio is maintained either set of values should work equally well.

SERVICE HINTS ON CHASSIS 120168-D

REPEATED FUSE FAILURE

Repeated failure of the fuse (M1) may be caused by intermittent arcing in tubes or other components which will heal themselves after a short time. If this condition is encountered in the field, replace the fuse with a .6 Amp. Slo-Blo type.

PICTURE WIGGLE

Picture wiggle on chassis bearing no code triangle can be corrected by the following lead dress.

1. Dress the yellow lead to the cathode of the picture tube away from the horizontal multivibrator tube. This prevents stray pickup of video information by the multivibrator tube. Secure the yellow picture tube lead to the deflection yoke support bracket.
2. The white lead to the fringe compensation control and switch should be dressed away from the horizontal phase coil and the grid of the horizontal multivibrator tube.

SOUND IMPROVEMENT IN FRINGE AREAS

The signal to noise ratio can be improved by tuning in a TV station and touching up by ear the sound transformers L26, L27 and L28 for the best audio and minimum noise.

Chassis coded through triangle D can be further improved by shorting out the 4.5MC trap (L23) or moving it to the plate circuit of the video amplifier as shown in production change code triangle E in this bulletin.

(NOTE: If the 4.5MC trap is shorted out, the sound take-off transformer (L26) should be realigned.

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EMERSON MODELS 716F, 717F, 719F, 727D, 741D, 751D (Ch. 120168-D)

BLACK HORIZONTAL STREAKS IN PICTURE WHEN TUNED TO CHANNEL 6

Black horizontal streaks in the picture when tuned to channel 6 may be caused by harmonics of the Video IF, generated in the video detector, and coupled into the tuner. This condition is usually noticed in fringe areas and is tunable with the fine tuning. It can sometimes also, affect channels 5 and 7.

This condition can be eliminated by connecting a 10 or 20 microhenry RF choke between C36 and L26 in the grid of the video amp. Disconnect C36 from the sound take-off transformer (L26) and reconnect to the unused terminal on the terminal board near the video amp. Connect the RF choke between this terminal and the sound take-off transformer. Keep the lead to the sound take-off transformer as short as possible and dress the choke away from the video detector socket.

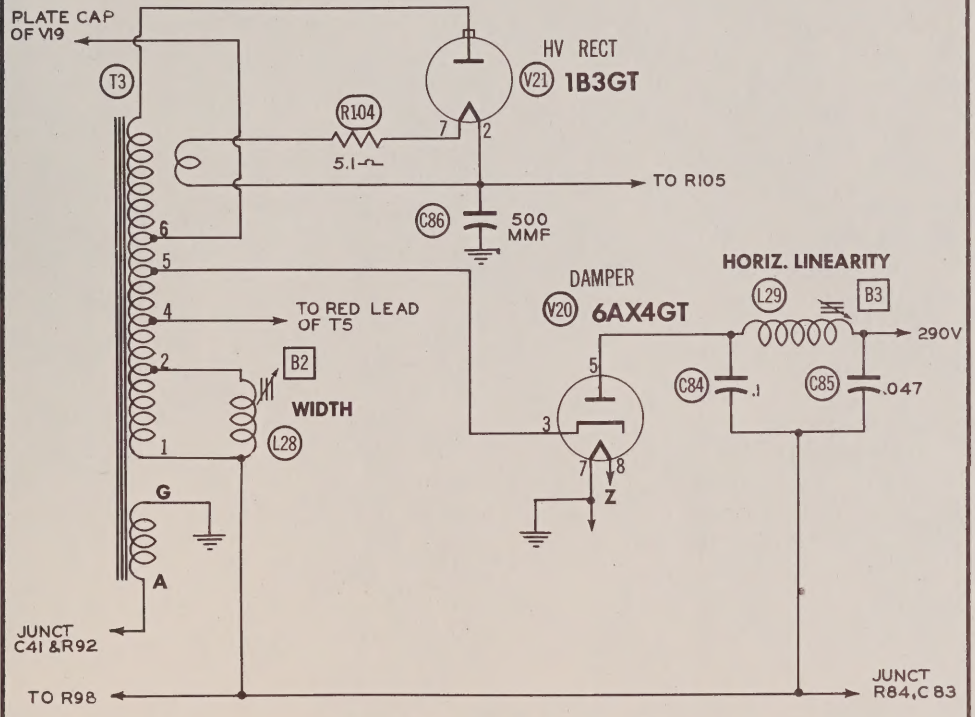
CORONADO MODELS 35TV2-43-9045D, 35TV2-43-9060C

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET 199

Coronado Models 35TV2-43-9045D and 35TV2-43-9060C are identical to Models 25TV2-43-9045C and 25TV2-43-9060B which are covered by Production Change Bulletin 68, Set 205 and Photofact Folder 5 in Set 199 except a new damper circuit is used.

In the new circuit the damper tube was changed from a 6W4GT tube to a 6AX4 and the lead from terminal 3 of the horizontal output transformer to pin 7 of the damper tube is removed. Pin 7 of the damper is then grounded. A partial schematic is given below which shows the revised circuit.

This change was made to reduce interference in nearby broadcast receivers caused by radiation from the horizontal output circuit into the AC line.



PHOTOFACT* Folder

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MODEL 228DX16

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DATE 8–53 SET 211 FOLDER 2

PHOTOFACT* Folder
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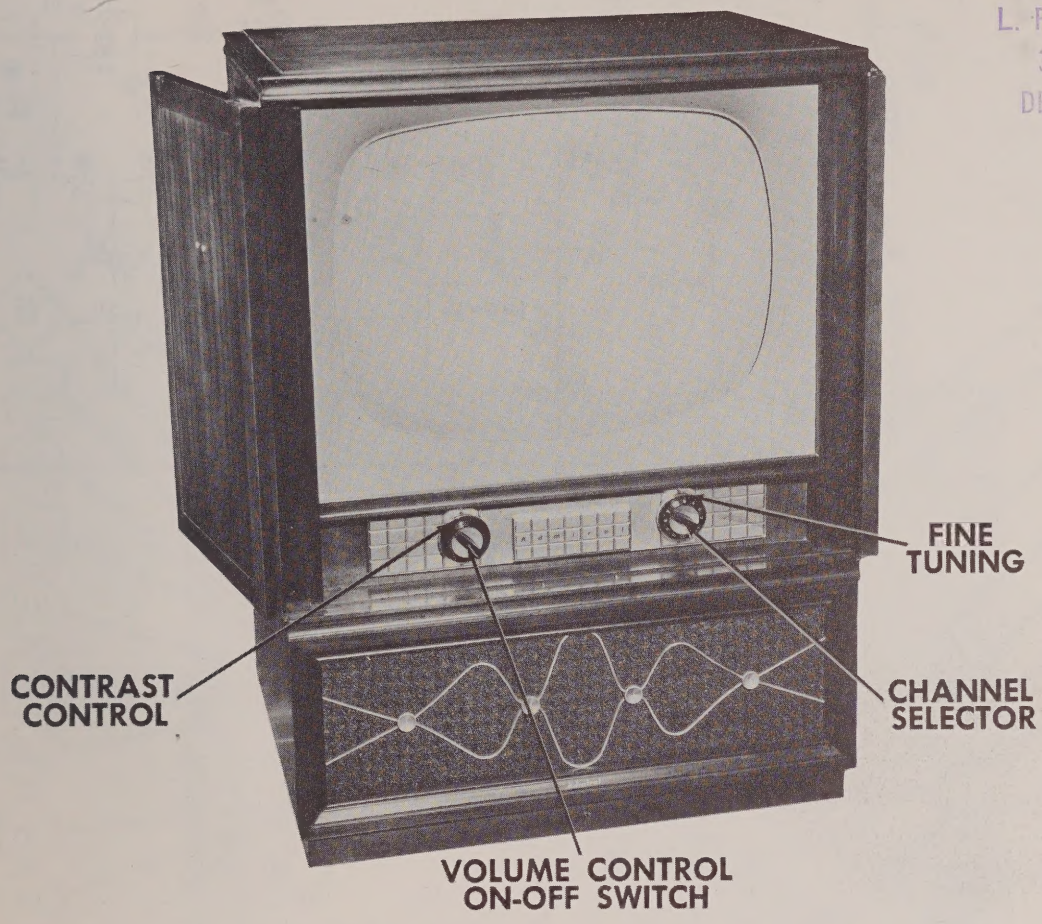

ADMIRAL
MODELS 228DX16, 17 (Ch. 23A1, Run 3)

ADMIRAL MODEL 228DX16

TRADE NAME	Admiral Models 228DX16, 228DX17 (Ch. 23A1, Run 3)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.28 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 25.75MC, Sound IF 21.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 13 thru 16
Photographs
- Cabinet-Rear View 11
- Capacitor Identification 4, 9
- Chassis-Top View 3
- RF Tuner 10
- Resistor Identification 19, 20
- Trans., Inductor & Alignment Identification 16

Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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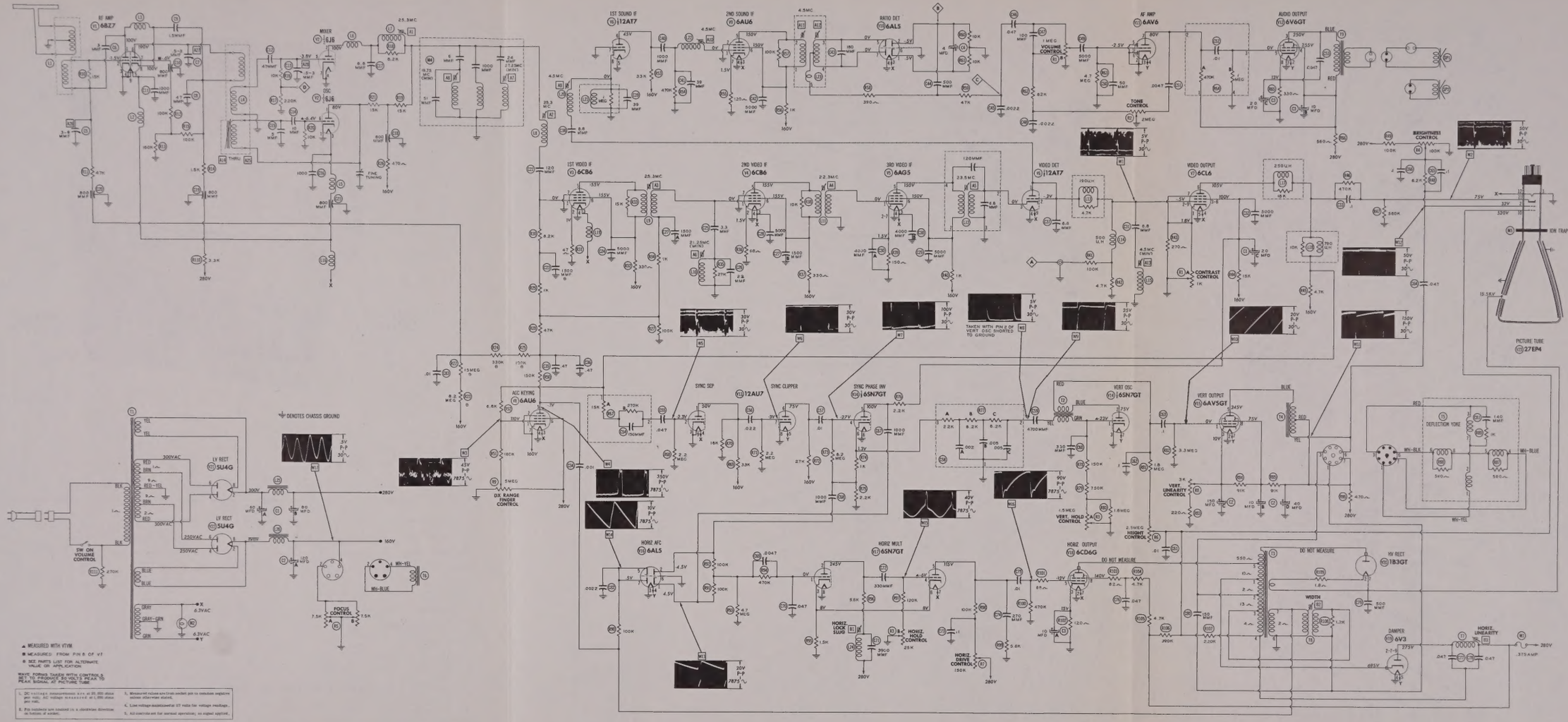
RF AMP V1 6BZ7
MIXER V2 6J6
OSC V3 6J6
1ST SOUND IF V10 12AT7
2ND SOUND IF V8 6AU6
RATIO DET V10 6AL5
AF AMP V11 6AV6
AUDIO OUTPUT V12 6V6GT
1ST VIDEO IF V4 6CB6
2ND VIDEO IF V5 6CB6
3RD VIDEO IF V6 6AG5
VIDEO DET V15 12AT7
VIDEO OUTPUT V7 6CL6
AGC KEYING V8 6AU6
SYNC SEP V13 12AU7
SYNC CLIPPER
SYNC PHASE INV V13 6SN7GT
VERT OSC V13 6SN7GT
VERT OUTPUT V13 6AV5GT
HORIZ AFC V10 6AL5
HORIZ MULT V17 6SN7GT
HORIZ OUTPUT V18 6CD6G
LV RECT V20 5U4G
LV RECT V20 5U4G
HV RECT V21 1B3GT
DAMPER V19 6V3
PICTURE TUBE V22 27EM4
ION TRAP
DENOTES CHASSIS GROUND
VOLUME CONTROL
TONE CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
HORIZ. HOLD CONTROL
HORIZ. LOCK SLUG
HORIZ. DRIVE CONTROL
WIDTH
HORIZ. LINEARITY
DX RANGE FINDER CONTROL
FOCUS CONTROL
SW ON VOLUME CONTROL
FINE TUNING
DEFLECTION YOKE
DO NOT MEASURE
TAKEN WITH PIN 2 OF VERT OSC SHORTED TO GROUND
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
▲ MEASURED WITH VTVM
■ MEASURED FROM PIN 8 OF V1
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are indicated in a clockwise direction, as bottom of socket.
3. Measured values are from socket pin to indicated negative voltage point when stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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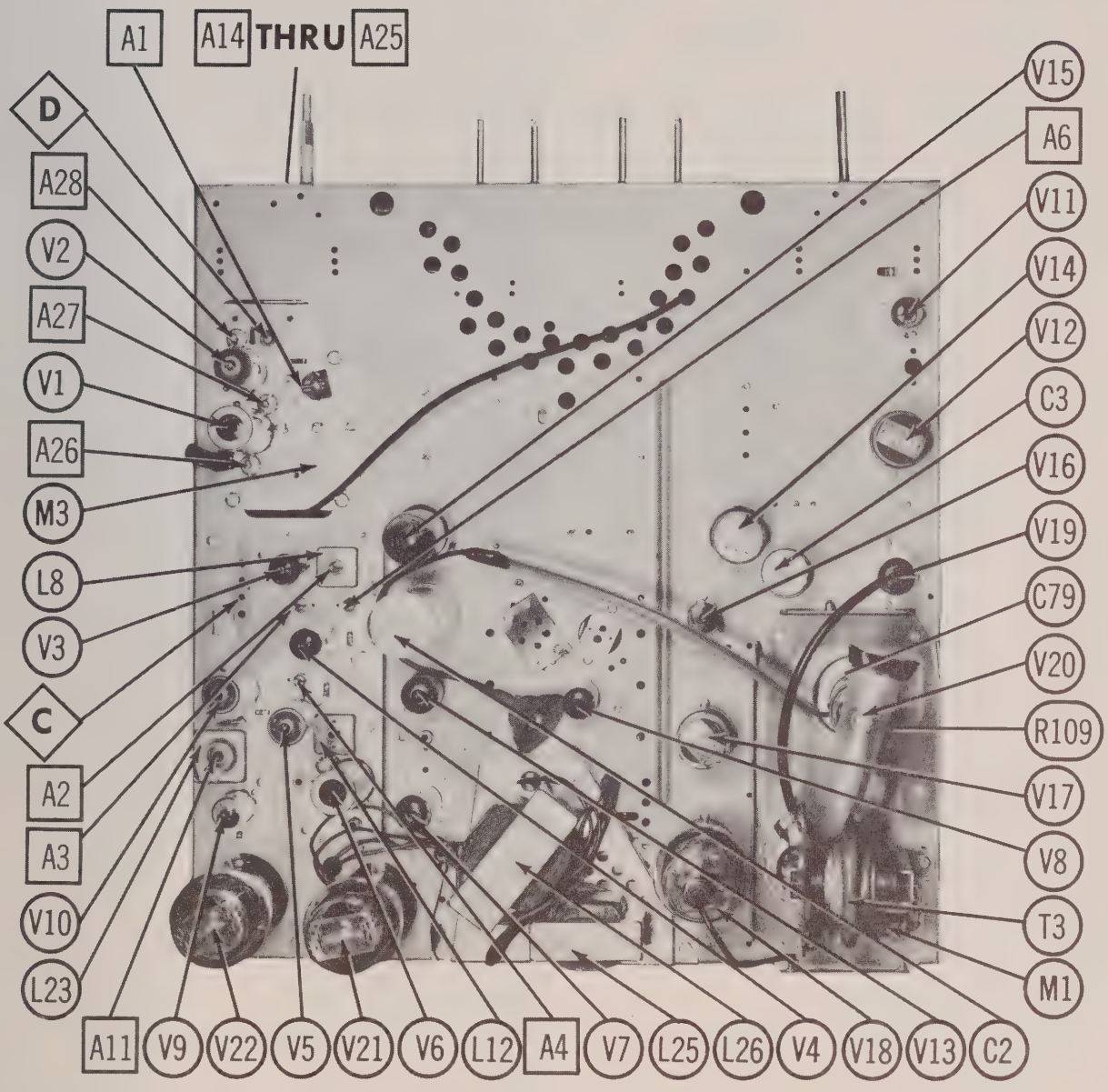
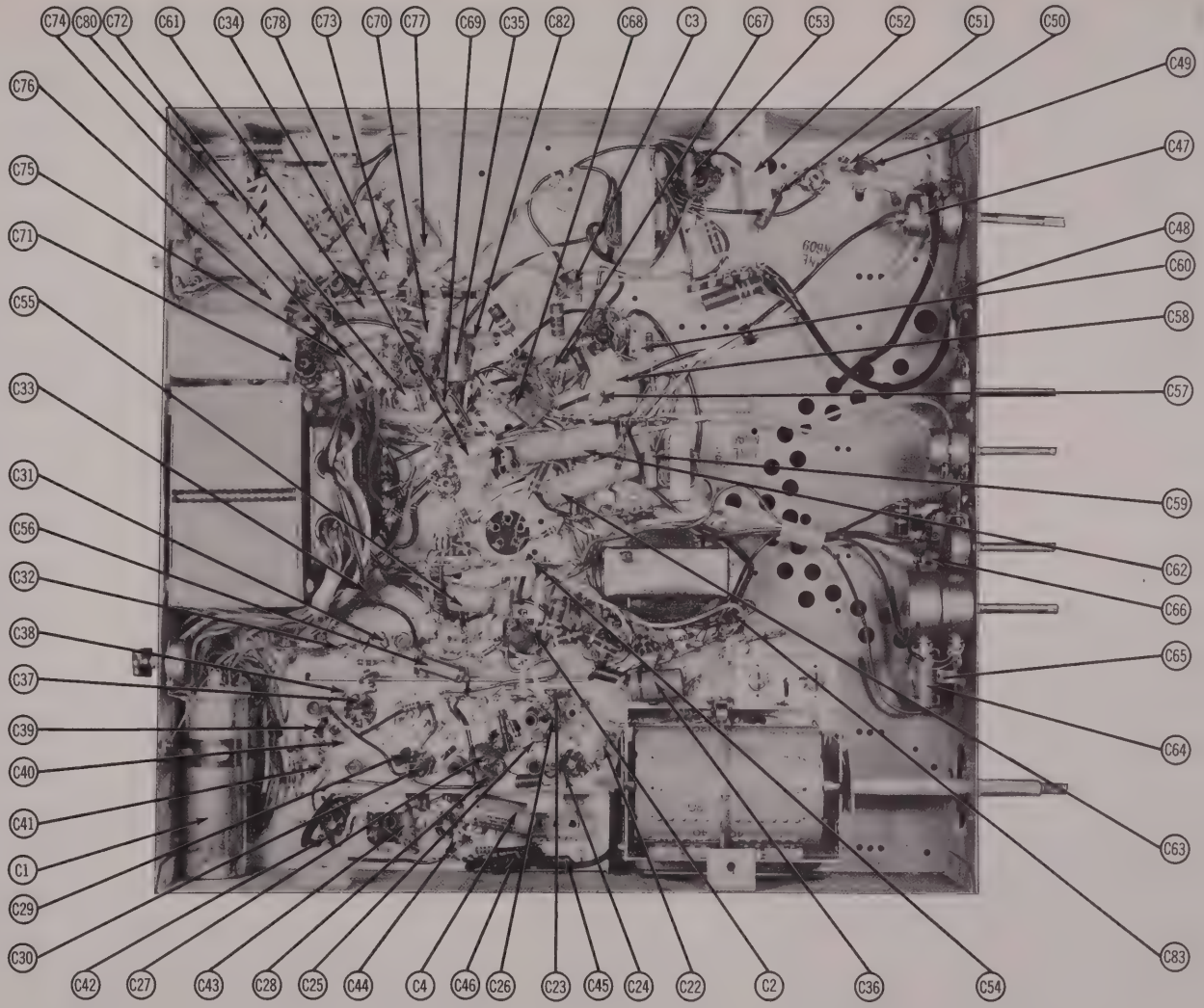


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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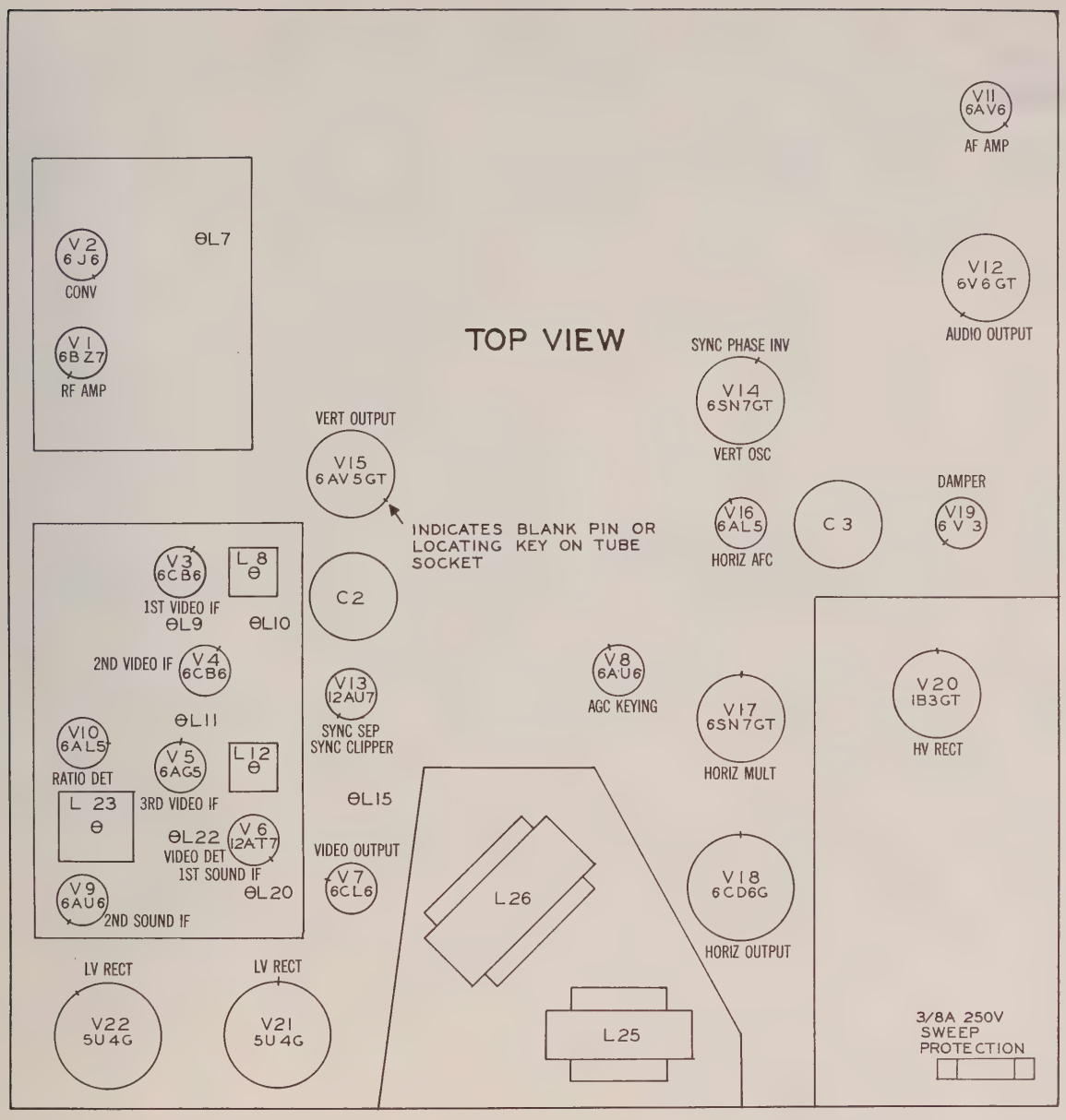
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21, V22

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V23
Has pic, no sound - V6, V9, V10, V11, V12
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V14,
No horiz. sync - V14, V16, V17
No vert. or horiz. sync - V13, V14

SWEEP FAILURE
No raster, has sound - V17, V18, V19, V20, V23, Fuse (M1)
No vertical deflection - V14, V15
Poor vert. linearity or foldover - V14, V15
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21, V22
Vert. off freq. - V14
Horiz. off freq. - V14, V16, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C35.
Connect the positive lead to chassis.
Turn the contrast control fully counter clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.3MC	Any	DC probe to point ◇A Common to chassis.	A1, A2, A3	Adjust for maximum deflection. Attenuate generator output to maintain approximately 1 Volt at VTVM.
2.	"	"	22.3MC	"	"	A4	"
3.	"	"	23.5MC	"	"	A5	"
4.	"	"	21.25MC	"	"	A6	Adjust for MINIMUM deflection.
5.	"	"	27.25MC	"	"	A7	Reduce bias to 1½ Volts . Adjust for MINIMUM deflection.
6.	"	"	19.75MC	"	"	A8	"
7.	"	"	25.3MC	"	"	A9	Repeat adjustment of A1 and A2 as in step 1. Use 3 Volt bias.

OVERALL VIDEO IF RESPONSE CHECK

Connect 3 volt bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.25MC 22.0MC 24.3MC 25.0MC 25.75MC	Any	Vert. amp to point ◇A Low side to chassis.		Check for response similar to Fig.1 . If necessary retouch A1 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to pin 1 (plate) of 12AT7 (V6A) . Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B Common to chassis.	A9, A10, A11	Adjust for maximum deflection. Attenuate generator output to maintain approximately 1 Volt at VTVM.
10.	"	"	"	"	DC probe to point ◇C Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to pin 1 (plate) of 12AT7 (V6A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point ◇B Low side to chassis.	A9, A10, A11	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
10.	"	"	"	"	"	Vert. amp to point ◇C Low side to chassis.	A12	Reconnect capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Connect a 10MMF capacitor from pin 6 of 6CL6 (V7) to pin 8 of 12AT7 (V6B).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.01MFD	High side to pin 1 (plate) of 12AT7 (V6A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B Common to chassis.	A13	Adjust for MINIMUM deflection.

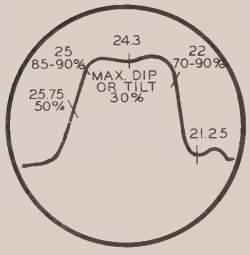


FIG.1

FIG. 2

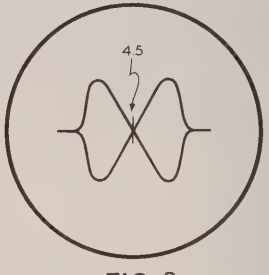


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point ⟨A⟩ Low side to chassis.	A14	Adjust to place sound marker in notch as in Fig. 4. Video marker should be at 50% on response curve.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

RF AND MIXER ALIGNMENT

Connect 3 volt bias battery to same point and in same manner as under Video IF Alignment, If difficulty is experienced in obtaining response curve of sufficient amplitude, remove the battery and short the point to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point ⟨D⟩ Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 5.
14.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 5. If markers fall below 70% on any channel make slight compromise adjustments of A26, A27 and A28. with channel switch set to that channel then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

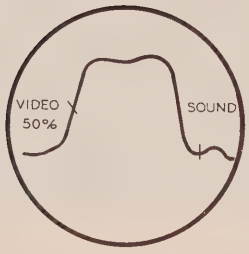


FIG. 4

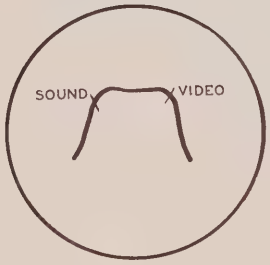
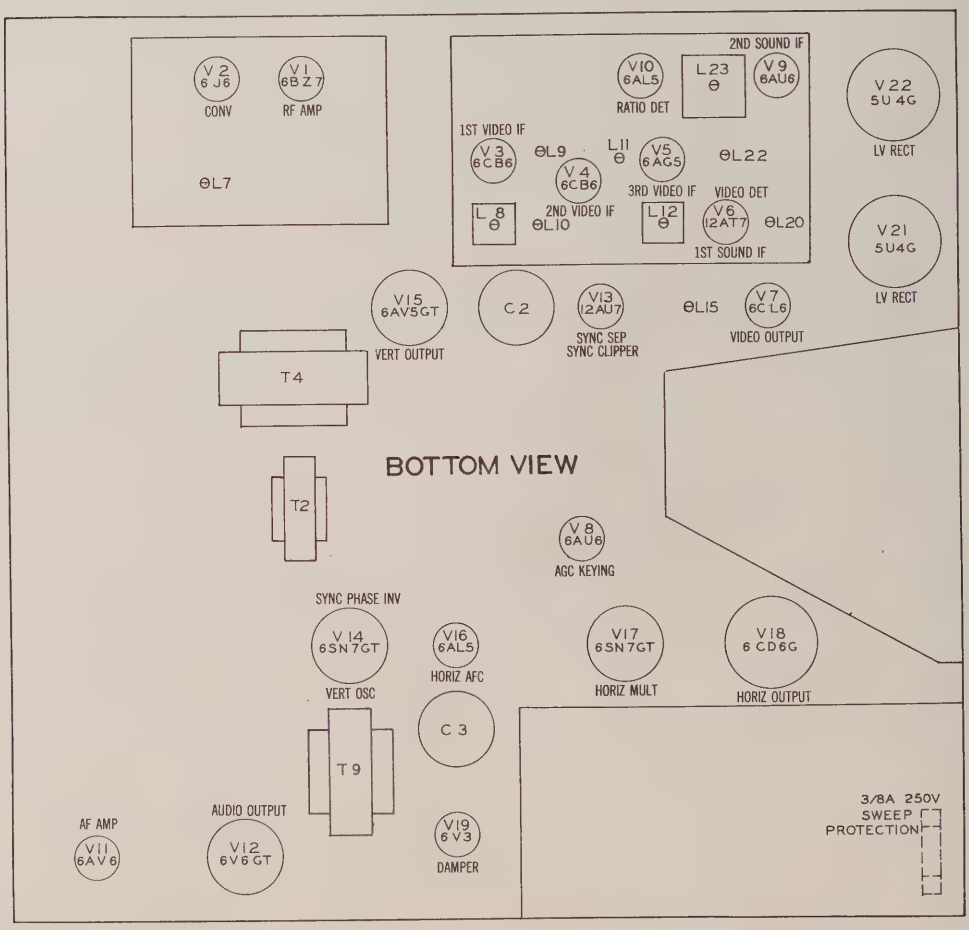


FIG. 5

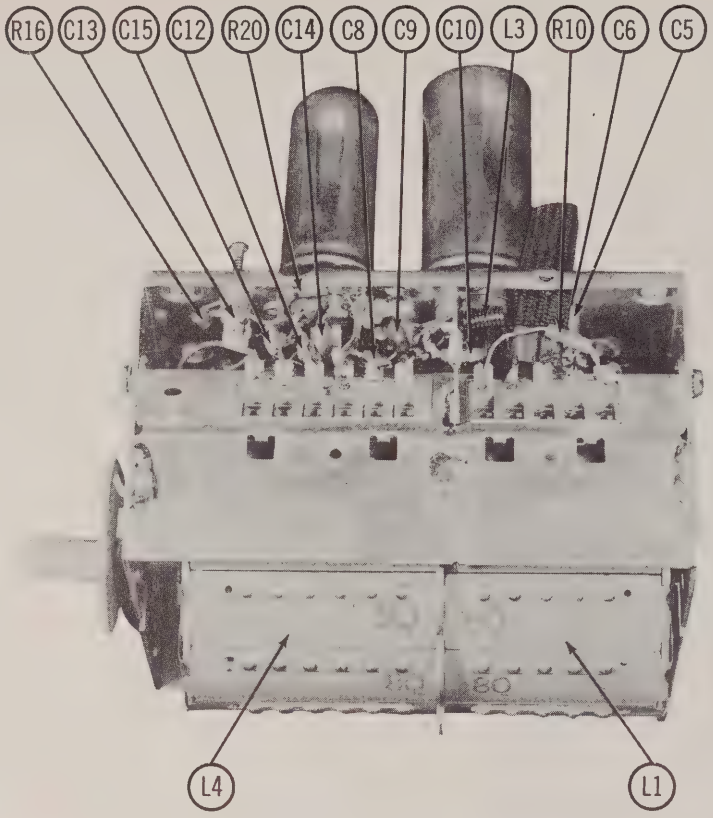
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	INF	630KΩ	0Ω	0Ω	.1Ω	†4.8KΩ	†170KΩ	INF	0Ω
V 2	6J6	‡15.6KΩ	‡15.6KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	‡500Ω	‡500Ω	0Ω		
V 4	6CB6	100KΩ	68Ω	.1Ω	0Ω	‡500Ω	‡500Ω	0Ω		
V 5	6AG5	.5Ω	150Ω	.1Ω	0Ω	‡1.1KΩ	‡1.1KΩ	150Ω		
V 6	12AT7	4.7KΩ	4.7KΩ	.6Ω	0Ω	0Ω	‡33.1KΩ	0Ω	10Ω	.1Ω
V 7	6CL6	200Ω	4.7KΩ	‡15.1KΩ	.1Ω	0Ω	‡4.8KΩ	200Ω	‡15.1KΩ	4.7KΩ
V 8	6AU6	‡11KΩ	‡164Ω	.1Ω	0Ω	300KΩ	†100Ω	‡164Ω		
V 9	6AU6	470KΩ	0Ω	.1Ω	0Ω	‡1.1KΩ	‡1.1KΩ	120Ω		
V 10	6AL5	10KΩ	10KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 11	6AV6	4.7Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†470KΩ		
V 12	6V6GT	INF	.1Ω	†900Ω	†660Ω	1 Meg	INF	0Ω	330Ω	
V 13	12AU7	‡22KΩ	2.2Meg	0Ω	.1Ω	.1Ω	‡27KΩ	2.2Meg	0Ω	0Ω
V 14	6SN7GT	1.2Meg	▲4Meg	0Ω	8.2Meg	‡17.2KΩ	3.2KΩ	.1Ω	0Ω	
V 15	6AV5GT	3.3Meg	0Ω	370Ω	INF	†1.1KΩ	INF	.1Ω	†54KΩ	
V 16	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	100KΩ	0Ω	100KΩ		
V 17	6SN7GT	5.1Meg	†5.7KΩ	1.5KΩ	140KΩ	†220KΩ	1.5KΩ	.1Ω	0Ω	Top Cap ▲100Ω
V 18	6CD6G	470KΩ	0Ω	120Ω	INF	470KΩ	†5.7KΩ	.1Ω	†9.5KΩ	Pin 9 †113Ω Top Cap 630KΩ
V 19	6V3	INF	†113Ω	INF	0Ω	.1Ω	INF	†113Ω	INF	Top Cap ▲560Ω
V 20	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								
V 21	5U4G	INF	47KΩ	INF	11Ω	INF	10.2Ω	INF	47KΩ	
V 22	5U4G	INF	40KΩ	INF	9Ω	INF	8.6Ω	†164Ω	40KΩ	
V 23	27EP4	0Ω	85KΩ	Pin 10 ▲220KΩ	Pin 11 ‡270KΩ	Pin 12 .1Ω				

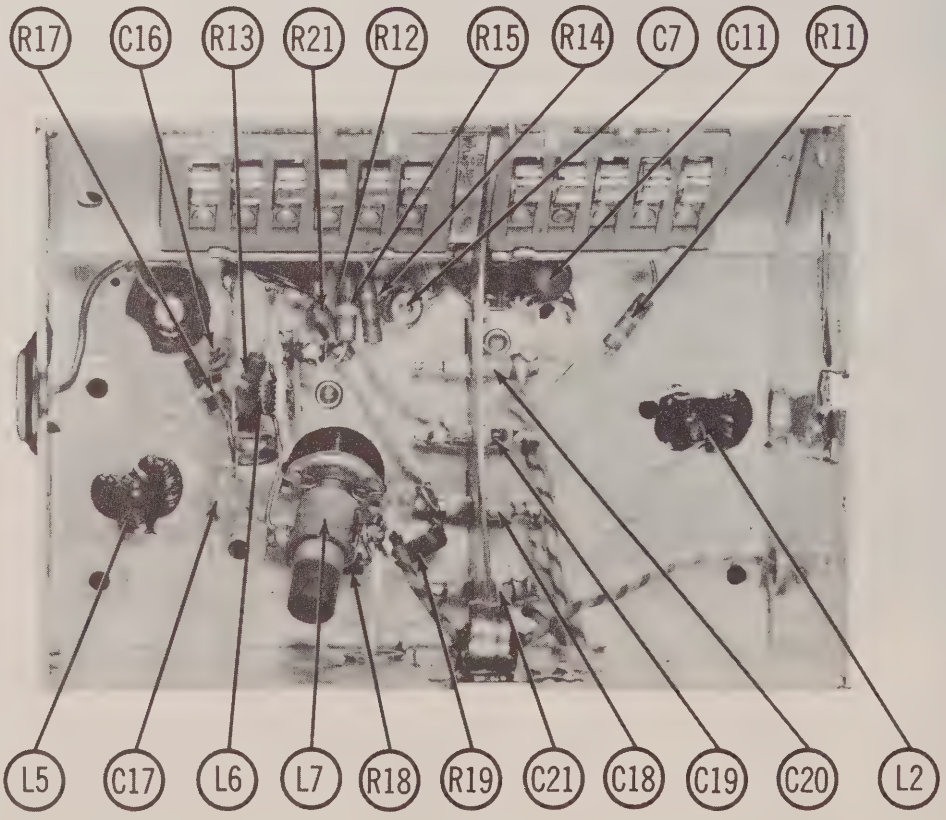
‡ MEASURED FROM PIN 8 OF V22.
† MEASURED FROM PIN 8 OF V21.
▲ MEASURED FROM TOP CAP OF V19.



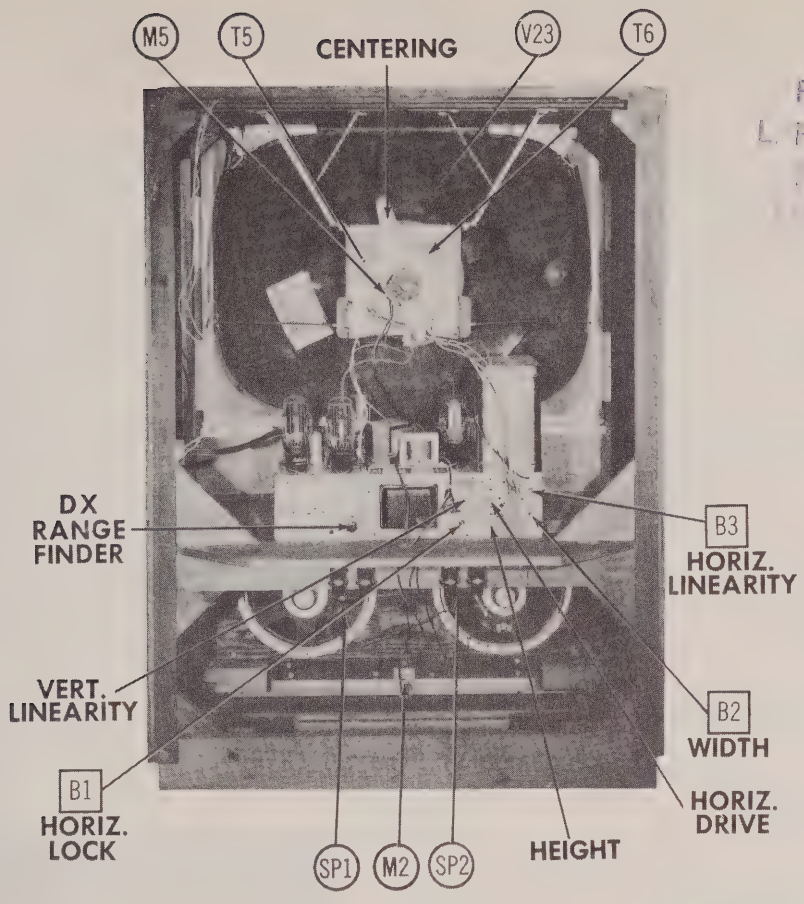
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

PROPERTY OF
L. F. BLANKENSHIP
ST.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The DX Range Finder should be kept as near to the "0" setting as possible, but still permitting satisfactory reception through use of the front panel controls.

Reception of weak signals can often be improved by advancing the DX range finder in a clockwise direction. However, if the range finder control is turned too far in this direction the picture may disappear entirely on strong signals.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

When the horizontal sweep circuit is functioning properly the horizontal hold control should keep the picture in horizontal sync through half of its range.

When necessary make horizontal lock and horizontal drive adjustments as follows:

1. Tune in a TV station, preferably a test pattern. Set brightness control for a lower than average setting. Set contrast control fully counter clockwise. Check DX Range Finder Control for proper adjustment.
2. Turn horizontal hold control fully counter clockwise. Turn the horizontal drive control fully clockwise.
3. Turn the horizontal lock slug (B1) clockwise until picture falls out of sync. If necessary, switch off channel and back again to throw picture out of sync.
4. Turn B1 slowly counter clockwise until picture falls into sync.
5. Switch to an unused channel. If a vertical white line appears near the center of the raster turn the horizontal drive control counter clockwise until the line disappears.
6. If the horizontal drive control required adjustment in step 5, repeat steps 3 and 4.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right. If two positions appear to give the proper linearity use the one where B3 is further counter clockwise.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check T5A and associated components located in yoke . See loss of high voltage.

INSUFFICIENT SWEEP

Check setting of drive and width control.

Check waveform W 16:

If Unsatisfactory	If Satisfactory
Substitute V17 and check associated components.	Substitute V18 and V19. Check C76 and components of yoke.

DRIVE LINES

Check setting of drive control. Substitute V18 and V19.

PIE CRUST EFFECT (Fig. 1)

Check horizontal AFC filter capacitor C70 for open.

COMPRESSED AT LEFT SIDE

Substitute V18 and V19. Check T5A and other components of yoke.

FOLDS

Substitute V19 . Check associated components.

XMAS TREE EFFECT

Substitute V17. Check C74 and C75. Check associated components.

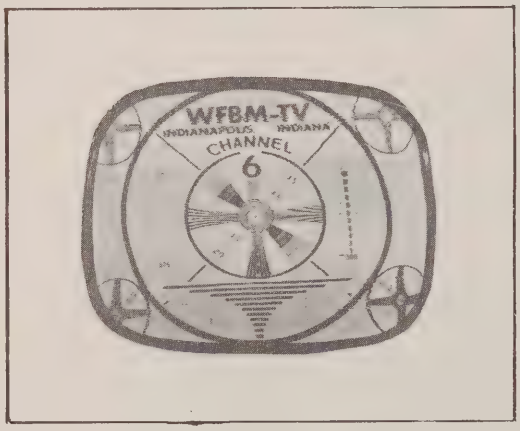


Fig. 1. PIE CRUST EFFECT
See HORIZ: SWEEP

VERTICAL

LOSS OF SWEEP

Substitute V14 and V15.

Check waveform at W 10:

If Unsatisfactory	If Satisfactory
Check T2 and associated components	Check vertical output transformer T4.

INSUFFICIENT SWEEP

Follow procedure outlined under loss of vertical sweep.

COMPRESSED AT BOTTOM

Check C63 for leaky condition. Check C2c in vertical output tube cathode for open.

COMPRESSED AT TOP, STRETCHED AT BOTTOM

If adjustment of heights and vertical linearity control does not correct this condition, check C62.

UNCONTROLLABLE VERTICAL OSCILLATOR (Fig. 2)

Check C62 in vertical output grid circuit for open.

FOLDS

Substitute V14 and V15. Check associated components.

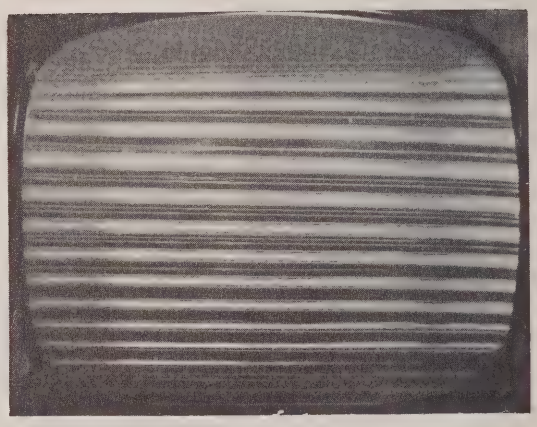


Fig. 2. UNCONTROLLABLE VERTICAL OSCILLATOR
See VERTICAL SWEEP

SYNC

HORIZONTAL

LOSS OF SYNC

Check waveform at W 15:

If Unsatisfactory	If Satisfactory
Substitute V13 and V14. Check circuit components.	Check waveform W14.

Check waveform W14:

If Unsatisfactory	If Satisfactory
Check feedback network R90 and C82. Substitute V16.	Substitute V17. Check associated components particularly L24 and C71.

CRITICAL HOLD

Substitute V13, V14, V16 and V17. If this does not correct trouble, follow procedure outlined under horizontal loss of sync.

PULLING PICTURE

Substitute V16 and V17. Check circuit components , particularly C69. If picture still pulls, try substituting power transformer as there may be leakage between filament and high voltage windings.

VERTICAL

LOSS OF SYNC

Check waveform W8 and W 9:

If Unsatisfactory	If Satisfactory
Substitute V13 and V14. Check associated components especially the integrator.	Substitute V14 and V15, Check associated components.

CRITICAL HOLD

Substitute V13 and V14. Check circuit components, particularly C55 and C57.

TRIGGERING

Substitute V14 and V15. Check filament lead dressing away from grid leads.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		ADMIRAL PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6AG5	6AG5	7BD	
V6	Video Detector-1st. Sound IF Amp.	12AT7	12AT7	9A	
V7	Video Output	6CL6	6CL6		
V8	AGC Keying	6AU6	6AU6	7BK	
V9	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6V6GT	6V6GT	7S	
V13	Sync Separator Sync Clipper	12AU7	12AU7	9A	
V14	Sync Phase Inv. - Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6AV5GT	6AV5GT	6CK	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6CD6G	6CD6G	5BT	
V19	Damper	6V3	6V3	9BD	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	ADMIRAL PART No.	SYLVANIA PART No.			
V23	27EP4	27GP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▰60	450	67C15-26	AFH3-46		CO37			TVL-3720	
B	■80	400		PRS250/20						
C	▲20	250				BR2025				
C2A	■120	250	67C15-25						TVL-4637	
B	▲10	250								
C	150	50								
D	▰40	400								
C3A	10	25	67C15-19	AFH3-124		CO91		FP345.2	TVL-3731	
B	■10	450								
C	▲20	25								
C4	4	50	67A4-9	PRS150/4		BR550		TC30	TVA-1303	
C5	3-9		98A45-96		829-10					
C6	3		94D47-54	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C7	.5-3		98A45-23		829-3			CT565A		
C8	47		94D47-50	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C9	1.5		94D46-84	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C10	800		94C37-90	CN-1-001	MFT-1000				503C-D1	
C11	1000		98A45-24	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	47		94D47-50	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C13	.5-3		98A45-23		829-3			CT565A		
C14	10		94D47-51	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C15	5		94D47-52	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C16	1000		98A45-24	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C17	6.8		94D47-53	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C18	800		94C37-90	CN-1-001	MFT-1000				503C-D1	
C19	800		94C37-90	CN-1-001	MFT-1000				503C-D1	
C20	800		94C37-90	CN-1-001	MFT-1000				503C-D1	
C21	800		94C37-90	CN-1-001	MFT-1000				503C-D1	
C22	120		65B1-10	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C23	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	Note 1
C24	5000		65C10-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C25	3.3		65C6-89	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C26	22		65C6-47	SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C27A	1500		65A17-2	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C28	5000		65C10-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C29	5000		65C10-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C30A	4000		65A17-1	BPD-2X004	MD-402	TM5DD4		DCD-524	5HK-2D4	
B	4000				MD-402					
C31	6.8		65C6-71	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C32	5000		65C10-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C33	.1	400	64B5-5	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C34	.001	600	64B9-19	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C35	.47	100	64A10-1	P288-47		PJ2P5		PT405	2TM-P47	
C36	.47	100	64B9-53	P288-47		PJ2P5		PT405	2TM-P47	
C37	6.8		65C6-71				N330K-6R8			
C38	6.8		65C6-71				N330K-6R8			
C39	39		65C6-88	SI39NP0	TCZ-39		NP0K-390		5TCC-Q39	
C40	1000		65C6-41	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C41	39		65C6-88	SI39NP0	TCZ-39		NP0K-390		5TCC-Q39	
C42	5000		65C10-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	180		65C6-59							
C44	500		65C6-6	SI500	D6-501	TM5T5	GP2K-501	UC-531	5GA-T5	
C45	.0022	400	64B9-17	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C46	.047	200	64B9-9	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C47	100		65C6-3	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	.0022	600	64B9-17	P588-0022	D6-222	PTE6D22	GP2-333-222	PT6222	67M-D22	
C49	5000		65C10-1	BPD-005	MD-502	TM5D5	BU-005	DC-525	5MK-D5	
C50	50		65C6-4	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C51	.0047	600	64B9-15	P588-0047	D6-472	PTE6D47	GP2-333-472	PT6247	67M-D47	
C52	.01		163B6-5	P588-01	D6-103	PTE6S1	GP2-333-103	PT611	67M-S1	
C53	.0047	600	64B9-15	P588-0047	D6-472	PTE6D47	GP2-333-472	PT6247	67M-D47	
C54	150		163B6-4	SI150	‡PC-178	TM5T15	GP2K-151	UC-5315	5GA-T15	
C55	.047	600	64B9-9	P588-047	DF-503	PTE6S47		PT6147	67M-S47	
C56	.023	400	64B9-30	P488-023	DF-203	PTE4S22		PT4122	47M-S22	
C57	.01	400	64B9-13	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	47M-S1	
C58A	.002			P888-002		PTE6D2		PT622		
B	.005		‡63B6-3	P888-005	‡PC-190	PTE6D5	‡1405-01	PT625	‡101C1	
C	.005			P888-005		PTE6D5		PT625		
C59	4700	500	65B21-472	1464-005		IDR5D5		MCB465	MS-25	
C60	330	500	65B21-331	1469-00035						
C61	.01	600	64B9-13	P888-01	D6-103	PTE6S1	GP2-333-103	PT611	67M-S1	
C62	.1	600	64B5-5	P888-1	DF-104	PTE6P1		PT601	67M-P1	
C63	.1	600	64B5-5	P888-1	DF-104	PTE6P1		PT601	67M-P1	
C64	.047	600	64A2-14	P888-047	DF-503	PTE6S47		PT6147	67M-S47	
C65	.1	400	64B5-5	P488-1	DF-104	PTE4P1		PT401	47M-P1	
C66	.1	400	64B5-5	P488-1	DF-104	PTE4P1		PT401	47M-P1	
C67	1000	500	65D21-102	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C68	1000	500	65B21-102	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C69	.0047	600	64B9-15	P888-0047	D6-472	PTE6D47	GP2-333-472	PT6247	67M-D47	
C70	.047	600	64B9-9	P888-047	DF-503	PTE6S47		PT6147	67M-S47	
C71	3900	500	65B21-63	1464-004		IDR5D4		MCB463	MS-24	
C72	330	500	65B21-331	1469-00035						
C73	.1	600	64A2-5	P888-1	DF-104	PTE6P1		PT601	67M-P1	
C74	2?3	500	65B21-271	1469-0003		MC2241		MC2241	MS-33	
C75	.01	600	64B9-13	P668-01	D6-103	PTE6S1	GP2-333-103	PT611	67M-S1	
C76	.047	600	64B8-9	P668-047	DF-503	PTE6S47		PT6147	67M-S47	
C77	.047	600	64B8-9	P888-047		PTE6S47		PT6147	67M-S47	
C78	.047	600	64A2-14	P888-047		PTE6S47		PT6147	67M-S47	
C79	500	30000	65B18-8		TV3-502					
C80	100	3000	65C10-10							
C81	140	1500	65B1-74							
C82	.0022	600	64B9-17	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	67M-D22	
C83	.01	600	64B9-13	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	67M-S1	

Note 1. Some Models use 1000MMF in this application.
† Items C62, R64A, R64B are combined in one unit.
ϕ Items C54, R67A, R67B are combined in one unit.
♦ Items C68A, C68B, C68C, R77A, R77B, R77C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
A	1000Ω	½	75B11-22	QJ-442**	RTV-404	SBBT-732-S		Contrast-Panel
B	1 Meg	½						Volume & Sw.Tap④ 850KΩ-Rear
R2A	2 Meg	½	75B13-22	QH-139	AG-83-S	AB-75	U-56	Tone
B	Shaft		Not Reg.	Not Reg.	KS8-3	AK-4	Not Reg.	Attach to R2A
R3A	1.5Meg	½	75B17-3	QJ-424*	RTV-403		UF26L	Vert. Hold-Panel
B	25KΩ	½					UR253L	Horiz. Hold-Rear
R4A	100KΩ	½	75B13-25	QH-138	AG-69-S	AB-40	U-41	Brightness
B	Shaft		Not Reg.	Not Reg.	KS8-3	AK-4	Not Reg.	Attach to R4A
R5A	7500Ω	4	75B16-2					Focus-Wire Wound
B	7500Ω	4						
R6A	2.5Meg	½	75B13-3	QH-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Reg.	Not Reg.	FKS-1/4	AK-1	Not Reg.	Attach to R6A
R7A	150KΩ	½	75B13-29	QH-129	AG-52-S	AB-46	U-43	Horiz. Drive
B	Shaft		Not Reg.	Not Reg.	FKS-1/4	AK-1	Not Reg.	Attach to R7A
R8A	3000Ω	2	75B13-18	WK-3000	A43-3000		R3000L	Vert. Linearity-Wire Wound
B	Shaft		Not Reg.	Not Reg.	FKS-1/4		Not Reg.	Attach to R8A
R9A	5 Meg	½	75B1-54	QJ-141	AG-85-S	AB-87	SU-67	DX Range Finder
B	Shaft		Not Reg.	Not Reg.	FS-3	AK-1	Not Reg.	Attach to R9A

* CONCENTRIKIT EQUIVALENT-KIT K-5, BASE ELEMENTS & SHAFTS B11-138 & P1-121 (Panel) B11-120 & R12-129 (Rear).
** CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-108 & P1-126 (Panel) B19-137X & R2-212 (Rear) & SWITCH 78-1.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.	NOTES
R10	15KΩ	½	98A45-87	BTS-15K	
R11	47KΩ	½	98A45-17	BTS-47K	
R12	100KΩ	½	94C37-87	BTS-100K	
R13	180KΩ-5%	½	94D47-59	BTS-180K-5%	
R14	1500Ω	½	94D47-56	BTS-1500	
R15	100KΩ-5%	½	94C37-87	BTS-100K-5%	
R16	10KΩ	½	98A45-18	BTS-10K	
R17	220KΩ	½	98A45-21		
R18	8200Ω	½	60B8-822		
R19	15KΩ	½	98A45-87		
R20	10KΩ	½	98A45-18	BTS-10K	
R21	15KΩ	½	98A45-87	BTS-15K	
R22	15Meg	½		BTS-15Meg	Note 1
R23	8.2Meg	½		BTS-8.2Meg	Note 1
R24	330KΩ	½		BTS-330K	Note 2
R25	100KΩ	½		BTS-100K	Note 2
R26	470Ω	½	60B8-471	BTS-470	
R27	100KΩ	½	60B8-154	BTS-100K	
R28	47KΩ	½	60B8-473	BTS-47K	
R29	1000Ω-5%	½	60B8-102	BTS-1000-5%	
R30	8200Ω-5%	½	60B7-822	BTS-8200-5%	
R31	47Ω	½	60B28-45	BTS-47	
R32	330Ω	½	60B8-331	BTS-330	
R33	15KΩ-5%	½	60B8-153		
R34	1000Ω	½	60B8-103	BTS-1000	
R35	27KΩ	½	60B8-273		
R36	68Ω	½	60B28-44	BTS-68	
R37	330Ω	½	60B8-331	BTS-330	
R38	100KΩ-5%	½	60B7-103		
R39	150Ω	½	60B8-151	BTS-150	
R40	1000Ω-5%	½	60B8-102	BTS-1000-5%	
R41	100KΩ	½	60B8-104	BTS-100K	
R42	4700Ω-5%	½	60B7-472	BTS-4700-5%	
R43	270Ω	½	60B8-271	BTS-270	
R44	15KΩ	½	60B14-153	BTA-15K	
R45	4700Ω	2	60B20-472	BTB-4700	
R46	470KΩ	½	60B8-474	BTS-470K	
R47	560KΩ	½	60B8-564	BTS-560K	
R48	8200Ω-5%	½	60B7-822	BTS-8200-5%	
R49	100KΩ	½	60B8-104	BTS-100K	
R50	150KΩ	½	60B8-154	BTS-150K	
R51	180KΩ	½	60B8-184	BTS-180K	
R52	680Ω	½	60B8-682	BTS-6800	
R53	33KΩ	½	60B8-333		
R54	470KΩ	½	60B8-474		
R55	120Ω	½	60B8-121	BTS-120	
R56	1000Ω-5%	½	60B8-102	BTS-1000-5%	
R57	100KΩ	½	60B8-104	BTS-100K	
R58	390Ω	½	60B8-391	BTS-390	
R59	47KΩ	½	60B8-473	BTS-47K	
R60	10KΩ	½	60B8-103	BTS-10K	
R61	10KΩ	½	60B8-103	BTS-10K	
R62	82KΩ	½	60B8-823	BTS-82K	
R63	4.7Meg	½	60B8-475	BTS-4.7Meg	
R64A	470KΩ	½		↑ 63B6-5	BTS-1 Meg
B	1 Meg	½			

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ADMIRAL PART No.	IRC PART No.	NOTES
R65	330Ω	1	60B14-331	BTA-330	
R66	560Ω	2	60B20-561	BTB-560	
R67A	15KΩ	½		ϕ 63B6-4	BTS-15K
B	270KΩ	½			BTS-270K
R68	2.2Meg	½	60B8-225	BTS-2.2Meg	
R69	33KΩ	½	60B8-333	BTS-33K	
R70	18KΩ	½	60B8-183	BTS-18K	
R71	2.2Meg	½	60B8-225	BTS-2.2Meg	
R72	27KΩ	½	60B8-273	BTS-27K	
R73	8.2Meg	½	60B8-825	BTS-8.2Meg	
R74	1000Ω	½	60B8-102	BTS-1000	
R75	2200Ω	½	60B8-222	BTS-2200	
R76	2200Ω	½	60B8-222	BTS-2200	
R77A	22KΩ	½		♦ 63B6-2	BTS-22K
B	8200Ω	½			BTS-8200
C	8200Ω	½			BTS-8200
R78	150KΩ	½	60B8-154	BTS-150K	
R79	750KΩ-5%	½	60B7-754	BTS-750K-5%	
R80	1.8Meg	½	60B8-185	BTS-1.8Meg	
R81	1.8Meg	½	60B8-185	BTS-1.8Meg	
R82	3.3Meg	½	60B8-335	BTS-3.3Meg	
R83	220Ω	2	60B20-221		
R84	91KΩ-5%	1	60B13-913	BTA-91K-5%	
R85	91KΩ-5%	1	60B13-913	BTA-91K-5%	
R86	470Ω	2	60B20-471	BTB-470	
R87	560Ω	½	60B8-561	BTS-560	
R88	560Ω	½	60B8-561	BTS-560	
R89	1000Ω	½	60B8-102	BTS-100	
R90	100KΩ	2	60B20-104	BTB-100K	
R91	100KΩ-5%	½	60B7-104	BTS-100K-5%	
R92	100KΩ-5%	½	60B7-104	BTS-100K-5%	
R93	4.7Meg	½	60B8-475	BTS-4.7Meg	
R94	470KΩ	½	60B8-474	BTS-470K	
R95	1500Ω	½	60B8-152	BTS-1500	
R96	5600Ω	½	60B8-562	BTS-5600	
R97	120KΩ	½	60B8-124	BTS-120K	
R98	100KΩ	½	60B8-104	BTS-100K	
R99	5600Ω	½	60B8-562	BTS-5600	
R100	470KΩ	½	60B8-474	BTS-470K	
R101	68Ω	½	60B28-44		
R102	120Ω	2	60B20-121	BW-2-120	
R103	82Ω	½	60B28-31		
R104	4700Ω	2	60B20-472	BTB-4700	
R105	4700Ω	2	60B20-472	BTB-4700	
R106	390KΩ	½	60B8-394	BTS-390K	
R107	220KΩ	½	60B8-224	BTS-220K	
R108	120Ω	2	60B20-122	BTB-1200	
R109	1.8Ω	½	60B28-46		
R110	3300Ω	2	60B20-332	BTB-3300	
R111	270KΩ	1	60B14-274	BTA-270K	

Note 1. Some models may use a single 22 Meg resistor in this application.
Note 2. Some models may use a single 430KΩ resistor in this application.
† Items R64A, R64B and C62 are combined in one unit.
ϕ Items R67A, R67B and C54 are combined in one unit.
♦ Items R77A, R77B, R77C, C68A, C68B, C68C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @ 3.2A	600VCT @ .2DADC tap ⑤ 500VCT .140ADC	5VAC @ 3A SEC. 4 6.3VAC @5.2A	5VAC @ 2A SEC. 5 6.3VAC @6.8A	60C36-1					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	190Ω	1060Ω	79A18-4	A-8125	A-3003	TBO-5	A-97X	208T2 ⑥	Vert. Osc. Trans. Horiz. Output Trans.
T3	570Ω tap ④⑤ 370Ω tap ⑤⑦	SEC. 2 0Ω	79D46-1						
T4	370Ωtap ⑤17Ω		79B43-1	A-8123①	A-3038①	TBO-5 ②	A-99X ③	204T2①⑤ 219D1	Vert. Output Trans. Horiz. Deflection Coils Vert. Deflection Coils Focus Coil
T5A	15Ω		94D54-1 ③						
B	46Ω								
T6	1900Ω		69D117-10 ⑤						
T7	13Ω		94A55-1		MWC-6		WC-12①①	213R1	Horiz. Linearity Coil
T8	3Ω	19Ω	94A56-1						Width Coil

① Drill new mounting hole.
② Connect as auto trans.
③ Includes cable and plug.
④ Connect to coded blue and red terminals.
⑤ Drill new mounting holes.
⑥ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T9	6KΩ	6.1Ω	24Ω	.94Ω	79C33-5	A-3823	A-2901	RO-303 ①		① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA ADMIRAL PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3Ω	78C78-17 ♦	10J11	10A31	* Both speakers are used in this set, connected in series. Only visual difference in the two is - one has a smooth cone(slightly heavier material, the other has a corrugated cone.
SP2	10"	PM	3Ω	78C78-2	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω CT	0Ω	94D46-52				Channel 2
B	Ant. Coil	0Ω CT	0Ω	94D46-53				Channel 3
C	Ant. Coil	0Ω CT	0Ω	94D46-54				Channel 4
D	Ant. Coil	0Ω CT	0Ω	94D46-55				Channel 5
E	Ant. Coil	0Ω CT	0Ω	94D46-56				Channel 6
F	Ant. Coil	0Ω CT	0Ω	94D46-57				Channel 7
G	Ant. Coil	0Ω CT	0Ω	94D46-58				Channel 8
H	Ant. Coil	0Ω CT	0Ω	94D46-59				Channel 9
I	Ant. Coil	0Ω CT	0Ω	94D46-60				Channel 10
J	Ant. Coil	0ΩCT	0Ω	94D46-61				Channel 11
K	Ant. Coil	0Ω CT	0Ω	94D46-62				Channel 12
L	Ant. Coil	0Ω CT	0Ω	94D46-63				Channel 13

COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L2	Fil. Choke	0Ω		98A45-13				
L3	Neutr.Coil	0Ω		94C37-89				
L4A	RF, Mixer Grid & Osc. Coil	0Ω		94D46-72				Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω		94D46-73				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		94D46-74				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		94D46-75				Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		94D46-76				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		94D46-77				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		94D46-78				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		94D46-79				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		94D46-80				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		94D46-81				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		94D46-82				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		94D46-83				Channel 13
L5	Fil. Choke	0Ω		98A45-14				
L6	RF Choke	0Ω		94D46-66				
L7	Conv.Plate	.4Ω		98A45-77	17-1003	TV-102 ■	6188 ■	
L8	1st.Video IF	.2Ω		72B106				
L9	2nd.Video IF	.4Ω	.4Ω	72C96-16	17-1062			
L10	21.25MC Trap	.1Ω		72C96-34	19-1020	TV-112 ■	6171 ■	Admiral part ϕ includes C25, C26 & R35.
L11	3rd.Video IF	.6Ω	.5Ω	72C96-16	17-1066			Admiral part ϕ includes R36
L12	4th.Video IF	.3Ω		72B105-1				Includes RF Choke & 120MMF capacitor
L13	Series Peaking Coil	5Ω		73A5-15	19-3150 *	TV-184 *	6180 *	190 Microhenries wound on 4.7KΩ resistor
L14	Shunt Peaking Coil	17Ω		73A5-7	19-3500	TV-188	6174	500 Microhenries
L15	4.5MC Trap	4.8Ω		72B99-3	20-1005 ▲	TV-151	1470	Admiral part ϕ includes C31
L16	Fil. Choke	0Ω		73A2-5			4604	1.5 Microhenries
L17	Series Peaking Coil	6Ω		73A5-14	19-3250 ▲	TV-185 ▲	6181 ▲	250 Microhenries, wound on 18KΩ resistor
L18	Shunt Peaking Coil	21Ω		73A11-1				790 Microhenries, wound on 10KΩ resistor
L19	Fil. Choke	0Ω		73A2-5			4604	1.5 Microhenries
L20	1st.Sound IF	4.6Ω		72B99-4	17-3400	TV-151	1470	
L21	RF Choke	10Ω		73A5-2			4630 †	58 Microhenries, wound on 1Meg resistor
L22	2nd.Sound IF	6.5Ω		72B99-4	17-3400	TV-151	4170	
L23	Ratio Det.	3.4Ω	.2Ω CT	72B98-2	17-1033 ϕ	TV-110 ϕ	1468 ϕ	Tertiary winding - .9Ω
L24	Horiz. Osc.	46Ω		94B48-1	19-1576	TV-163 **	6210	Admiral part ϕ includes C71 & R96

† Parallel with 1Meg resistor
▲ Parallel with 18KΩ resistor
ϕ When using as a replacement disconnect C43 across secondary winding
** Use original can
* Parallel with 4.7KΩ resistor
■ Enlarge mounting hole.
▲ Disconnect capacitor in parallel

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L25	.210ADC	100Ω	3.4 Hy.	74B18-6	C-2325 ①		TR-3300 ①	
L26	.140ADC		6.6 Hy.	74B18-5	C-1710			C-12X ①

① Drill one new mounting hole.

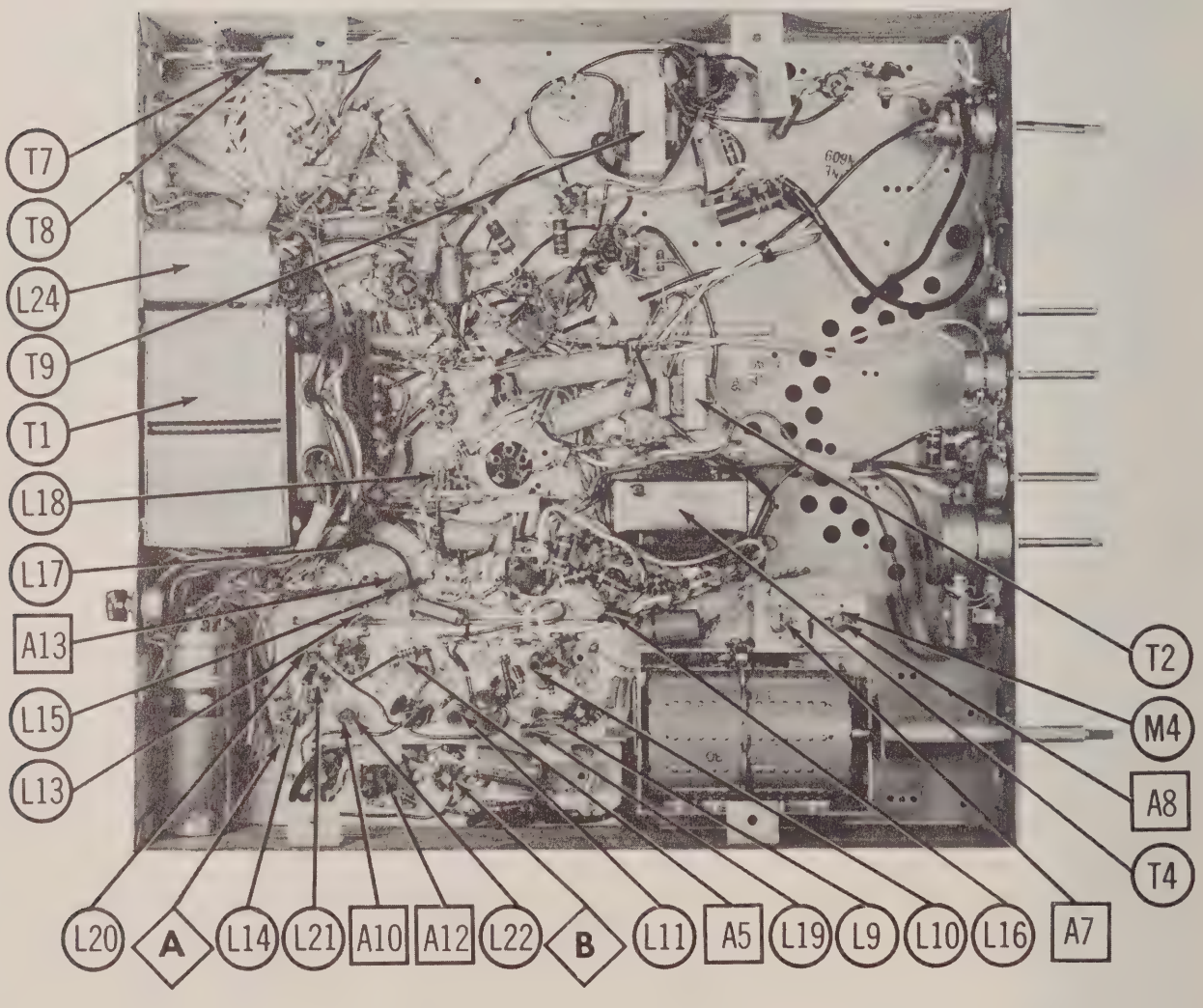
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ADMIRAL PART No. FUSE	ADMIRAL PART No. HOLDER	LITTELFUSE PART No FUSE	LITTELFUSE PART No HOLDER	BUSS PART No FUSE	BUSS PART No HOLDER
M1	8AG	3/8A ⑤ 250V	84A4-3	84A5-1	362.375	387001	AGX 3/8	4520

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	Pilot Light	81A 1-5	Type #44
M3	RF Tuner	94D 47-2	
M4	Trap Assembly	94D 47-56	
M5	Ion Trap Magnet	94A 15-2	
	Cabinet	35E 234-2	Model 228DX16
	Cabinet	35E 234-3	Model 228DX17
	Cabinet Doors	35E 234-50	Model 228DX16 (Matched set of 2 front doors).
	Cabinet Doors	35E 234-51	Model 228DX17 (Matched set of 2 front doors
	Cabinet Back	A3882	Model 228DX16 & 228DX17
	Door, Control Panel	23D 133-5	Model 228DX16 & 228DX17
	Safety Glass	21B 49-25	Model 228DX16 & 228DX17
	Plastic Mask	23E 134	Model 228DX16 & 228DX17
	Knob	33A 23-4	DX Range Finder (Black)
	Knob	33C 53-23	Channel Selector (Maroon) with Gold inserts.
	Knob	33C 53-24	Off-On Volume (Maroon) with Gold inserts.
	Knob	33D 88-20	Contrast(Maroon)
	Knob	33D 88-21	Fine tuning (Maroon)
	Knob	33A 92-3	Focus (Maroon)



CHASSIS BOTTOM VIEW- TRANS., INDUCTOR & ALIGN. IDENT.

TROUBLE SHOOTING AIDS - CONT

VIDEO

SOUND BARS

Check adjustment of A13 (4.5MC Trap) Check setting of local oscillator and alignemnt of IF stages.

POOR RESOLUTION

Check alignment of tuner and IF stages. Substitute V7 and check associated components.

POOR CONTRAST

Check waveform W2:

If Distorted or Weak	If Satisfactory
Substitute V4 and V7. Check circuit components.	Check picture tube.

SMEAR

Substitute V7 and check circuit components , particularly peaking coils.

ONE WIDE BLACK BAR ACROSS PICTURE

Check by substitution tuner, IF, and video amplifier tubes for leakage between filament and cathode.

AUDIO

WEAK OR NO SOUND

Check by substitution V6, V9, V10, V11 and V12. Check circuit components. Check alignment of sound and video IF stages.

BUZZ

Adjust discriminator secondary for minimum buzz. Substitute V10. Check local oscillator setting. Check for overload at waveform W2. If over - loading exists, check AGC network .

DISTORTED

Check audio stages using audio signal generator and scope:

If Undistorted	If Distorted
Check alignment of sound IF and discriminator.	Substitute V11 and V12. Check associated components.

POWER

SMALL RASTER

Substitute V21 and V22. Check filter components. Check B plus circuit. for short.

DIM PICTURE

Substitute V21 and V22. Check B plus components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse in high voltage compartment.

Check waveform W 16:

If Unsatisfactory	If Satisfactory
Substitute V17, Check associated components.	Substitute V18, V19 and V20. Check T3 and associated components.

BLOOMING

If substituting of V17, V18, V20 and V21 does not correct the trouble, follow procedure outlined under loss of high voltage.

GENERAL

NO SOUND, NO PICTURE, NO SNOW

Substitute V1, V2, V3, V5, V6 and V7. Check associated components. Check alignment of tuner.

SNOW BUT NO PICTURE OR SOUND

Check by substitution V1 and V2. Check tuner components.

WEAK PICTURE, GOOD SOUND (IN STRONG SIGNAL AREAS)

Check video IF tubes and components.

INTERMITTENT STREAKS

Check high voltage circuit for corona leakage and arcing.

The Trouble-Shooting photographs shown above are made with permission of the transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

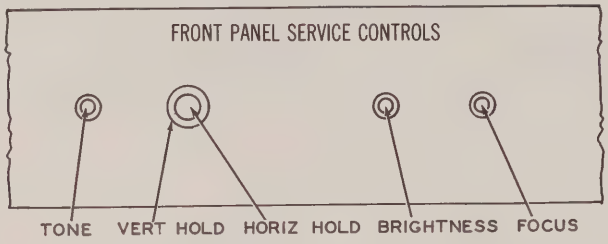
PICTURE TUBE SAFETY GLASS CLEANING

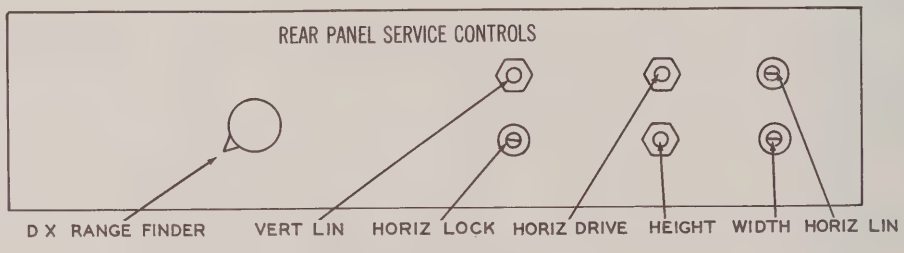
For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





SPECIAL ADJUSTMENTS- DX RANGE FINDER CONTROL

Reception of of weak signals can often be improved by advancing the DX range finder a clockwise direction. However, if the range finder control is turned too far in this direction the picture may disappear entirely on strong signals.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal lock slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary L19 (accessible from top of chassis through top slug, using proper hex alignment tool). (For location, see tube placement chart).

FUSES

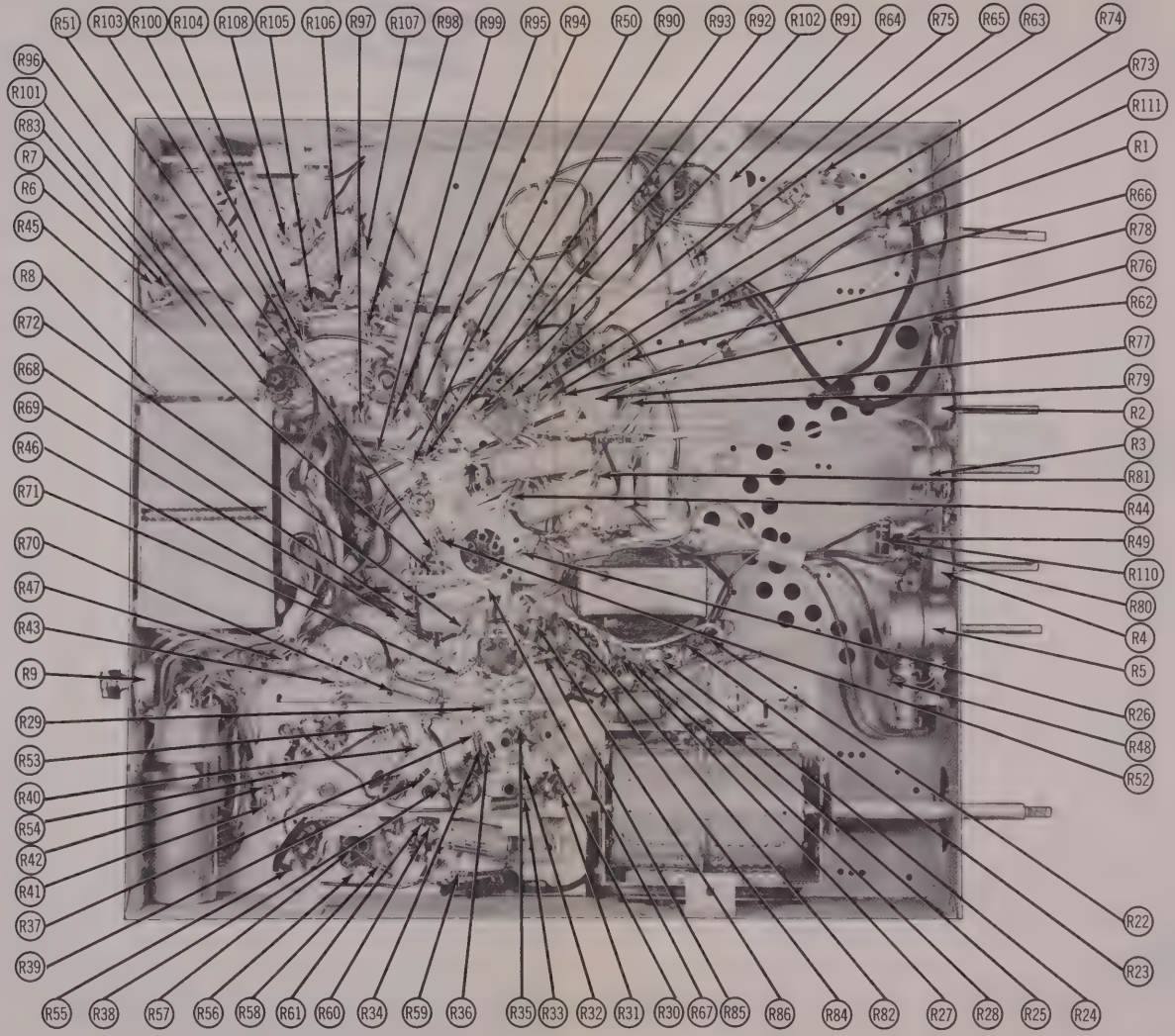
One fuse is used for Horizontal Output protection.(See tube placement chart for location.)

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push on type control knobs from front panel (1 located behind door).
2. Remove 11 wood and 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna strip.
4. Disconnect speakers (2 in series), yoke plug, focus coil plug, CRT socket and HV lead.
5. Remove yoke bracket ground, and jewel light.
6. Remove 4 chassis bolts. Remove chassis.
7. Remove 8 speaker nuts. Remove speaker (2 speakers - 4 nuts each).



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

AIRCASTLE MODEL 652.487S

PROPERTY OF
L. E. P. LANKENSHIP
ST.

AIRCASTLE
MODEL 652.487S

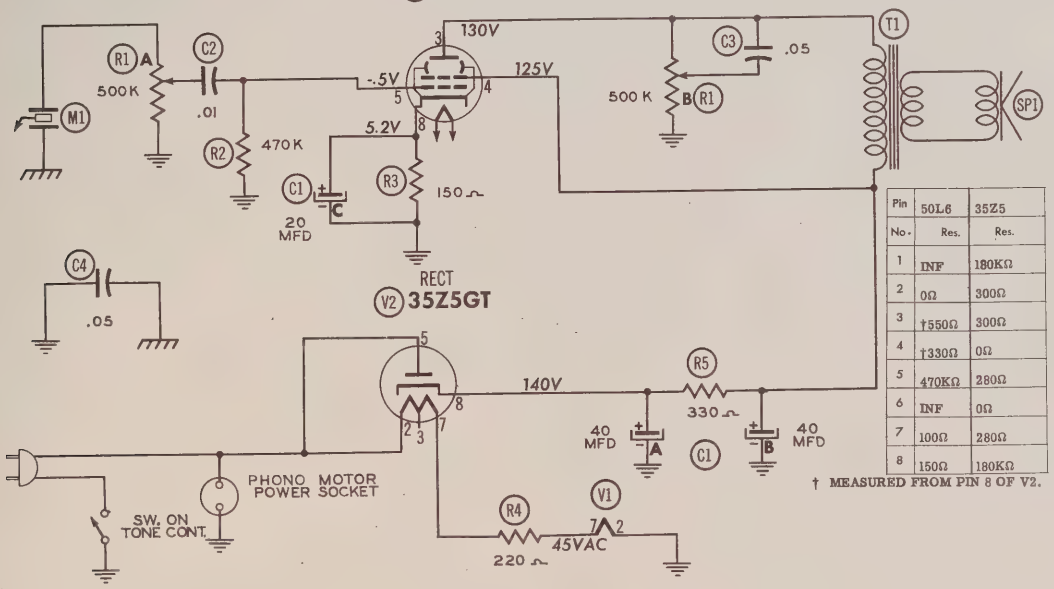
TRADE NAME	Aircastle Model 652.487S
SUPPLIER	Spiegel Inc., 1061 W. 35th. St., Chicago 9, Ill.
TYPE SET	AC Operated Audio Amplifier with 3 Speed Automatic Record Changer
TUBES (Two)	Types 50L6 Audio Output, 35Z5 Rectifier
POWER SUPPLY	110-120 Volts AC -60 Cycle RATING .24 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER, SEE V-M MODEL 950, PHOTOFACT SET 107, FOLDER 13 AND SUPPLEMENT SET 131, FOLDER 17. ALSO, SEE RECORD CHANGER MANUAL CM-3.

AIRCASTLE
MODEL 652.487S

AUDIO OUTPUT
V1 50L6GT

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE.



Pin No.	50L6 Res.	35Z5 Res.
1	INF	180KΩ
2	0Ω	300Ω
3	†550Ω	300Ω
4	†330Ω	0Ω
5	470KΩ	280Ω
6	INF	0Ω
7	100Ω	280Ω
8	150Ω	180KΩ

† MEASURED FROM PIN 8 OF V2.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1A	Audio Output	50L6GT	50L6GT	7S	
B	Audio Output	50C5	50C5	7CV	
C	Audio Output	50A5	50A5	6AA	
V2A	Rectifier	35Z5GT	35Z5GT	6AD	
B	Rectifier	35W4	35W4	5BQ	
C	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PRS150/50-30-20		EDL44215		3N532	TVA-3430	Blue
B	40	150								Red
C	20	150								Yellow
C2	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C3	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	1/2	VCD-200S	QJ-457R*			UF55A	Volume-Panel
B	500KΩ	1/2					UR55L	Tone-Rear
C	Switch	1/2					US-26	Attach to R1B

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B13-133 & P1-102 (Panel) B11-133 & R2-119 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	470KΩ	1/2		BTS-470K	
R3	150Ω	1/2		BTS-150	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R4	220Ω	10			
R5	330Ω	1		BTA-330	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.1KΩ	3Ω	220Ω	.5Ω		A-3332 ①	A-3025 ①	RO-2 ①	S-1X ①	① Bend mtg. tabs down file out slots, mount on original mtg. bracket.

SPEAKER

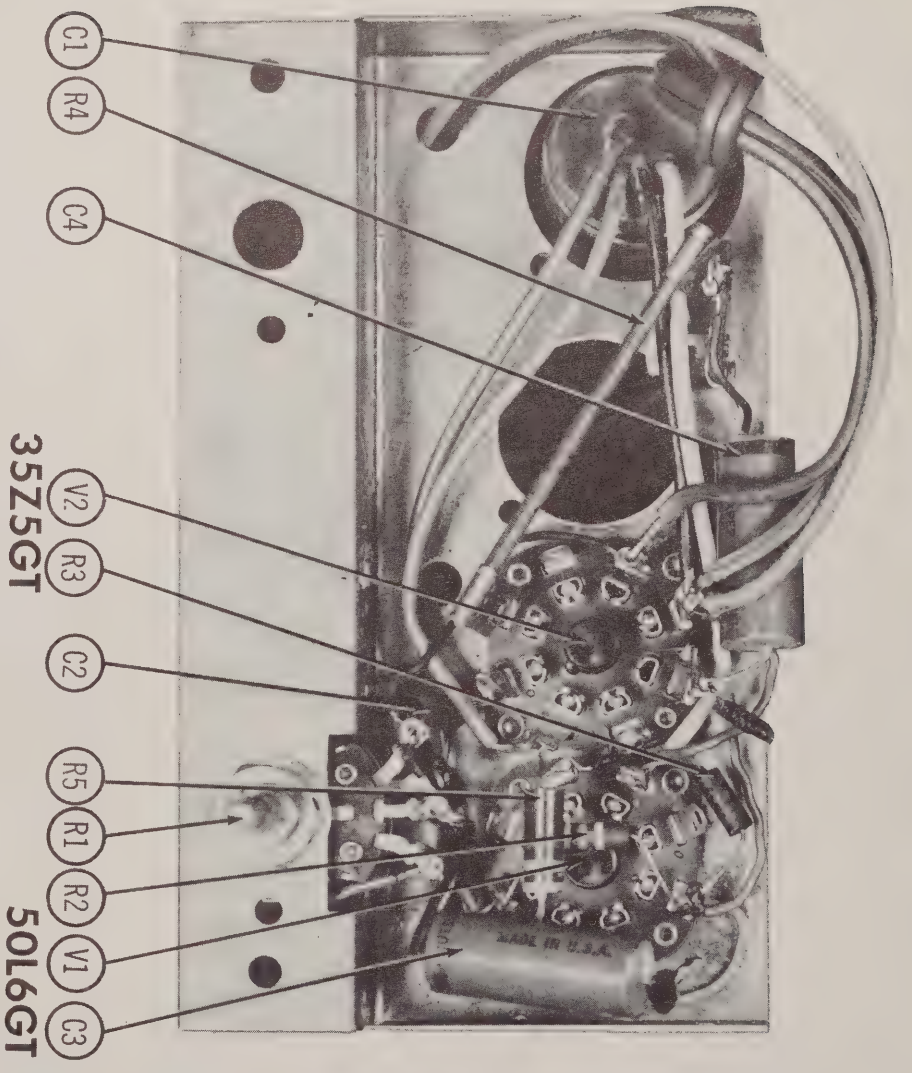
ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3Ω		ST-105 Mod .P5-X	5A1	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: AIRCASTLE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		16L3				60		

ASTATIC SHURE ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: AIRCASTLE PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-14AGA	W-422 or J-752	

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L. F. [illegible]NSHIP
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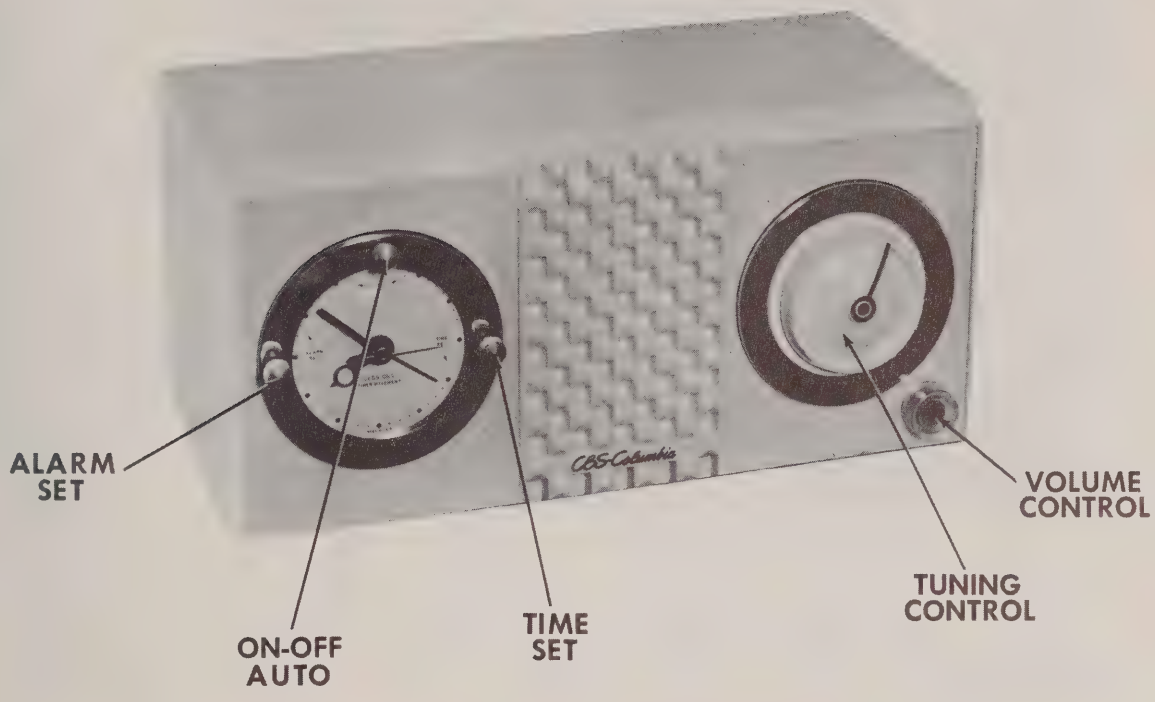
CBS COLUMBIA
MODELS 540, 541



CBS COLUMBIA
MODELS 540, 541

CBS-COLUMBIA 541

TRADE NAME	CBS-Columbia Models 540, 541
MANUFACTURER	CBS-Columbia Inc., 3400 47th. Ave., Long Island City, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12SA7GT Conv., 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 volts AC - 60 Cycle RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 12SA7 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang Fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

Replace receiver chassis in cabinet, turn tuning gang fully closed and set pointer parallel with base of cabinet at low frequency end of dial.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		CBS-Columbia PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amplifier	12SK7GT	12SK7GT	8N	
V3	Det-AVC-AF Amp.	12SQ7GT	12SQ7GT	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CBS-Columbia PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150		PRS150/50-		EDL5315		2N520	TVA-2450	Yellow
B	30	150		30						Red
C2	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C4	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	Note 1
C5	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C6	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	Note 2
C7	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	Note 2
C8	.05	400		489ZX-05		PJ4S5		PT415	4TM-S5	
C9	.1	400		P488-1		PTE4P1		PT401	4TM-P1	

Note 1. Model 540 uses .005 MFD in this application.
Note 2. Model 540 uses .02 MFD in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CBS-Columbia PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	PA-24143	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CBS-Columbia PART No.	IRC PART No.	
R2	20KΩ	½			
R3	3.3Meg	½		BTS-3.3Meg	
R4	10Meg	½		BTS-10Meg	
R5	220KΩ	½		BTS-220K	

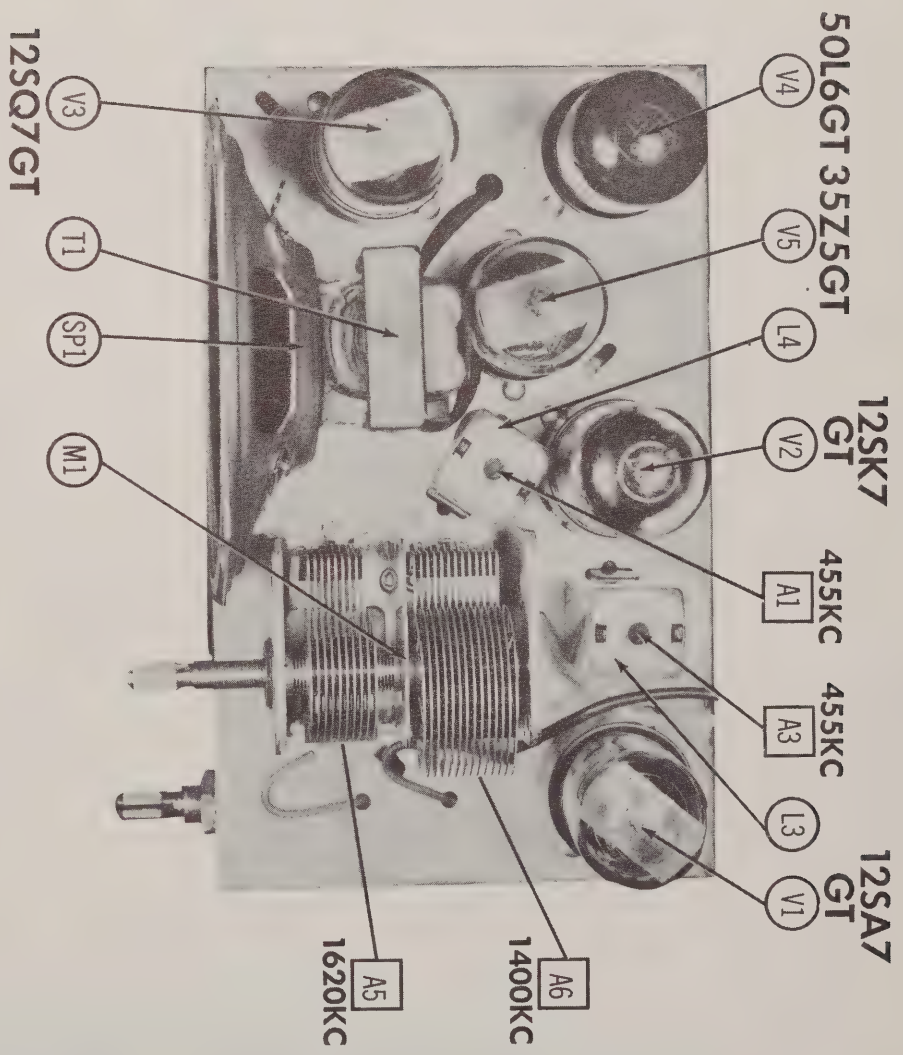
Note 1. Some models use a 18Ω resistor in this application.
Note 2. Some models use a 270KΩ resistor in this application.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CBS-Columbia PART No.	IRC PART No.	
R6	330KΩ	½		BTS-330K	
R7	22Ω	½		BTS-22	Note 1
R8	2200Ω	2		BTB-2200	
R9	330KΩ	½		BTS-330K	Note 2

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CBS-Columbia PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.5KΩ	3Ω	180Ω	.68Ω		A-3332 ①	A-3025 ①	RO-2 ①	S-1X ①	①Bend mtg. tabs down, file out slots, mount on original mtg. bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CBS-Columbia PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3Ω		ST-113 Mod. P4-X	4A07	

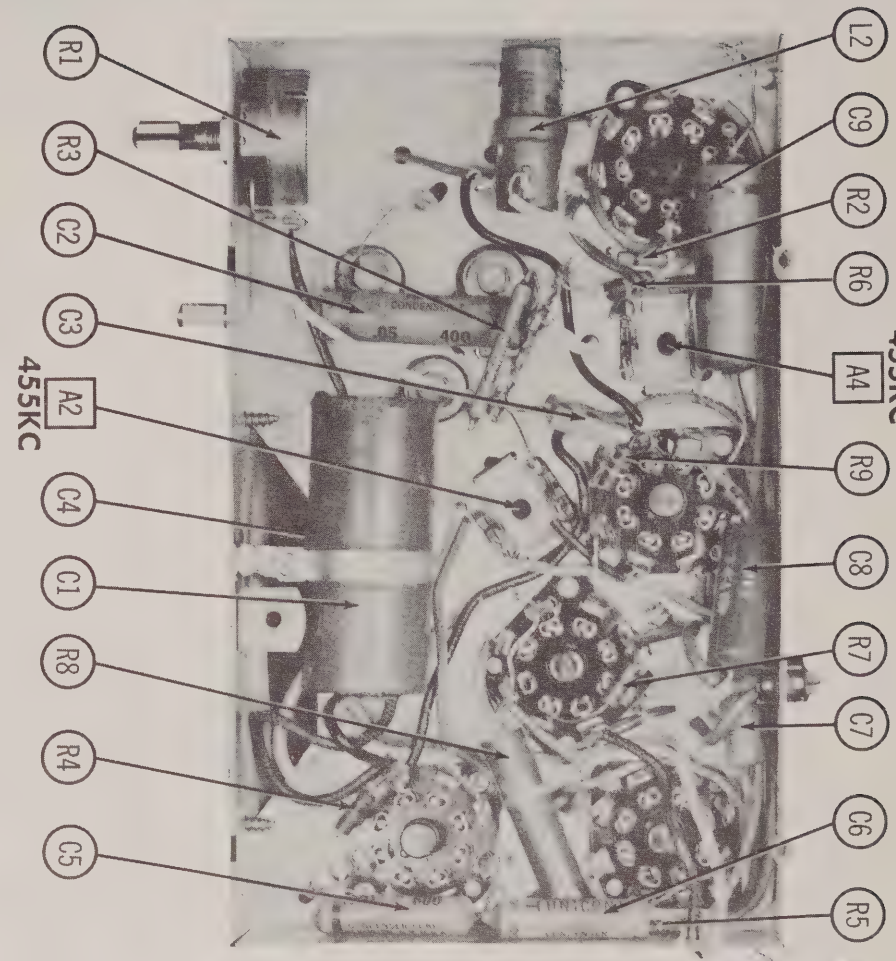
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CBS-Columbia PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	0Ω	3.4Ω	PB-5607-PC				Includes Cabinet Back
L2	Osc. Coil	.8Ω	8.5Ω		14-1073			
L3	Input IF	18Ω	18Ω	PP-33102	16-6758	12-C1	BC-352	
L4	Output IF	18Ω	18Ω	PP-33102	16-6758	12-C2	BC-353	

MISCELLANEOUS

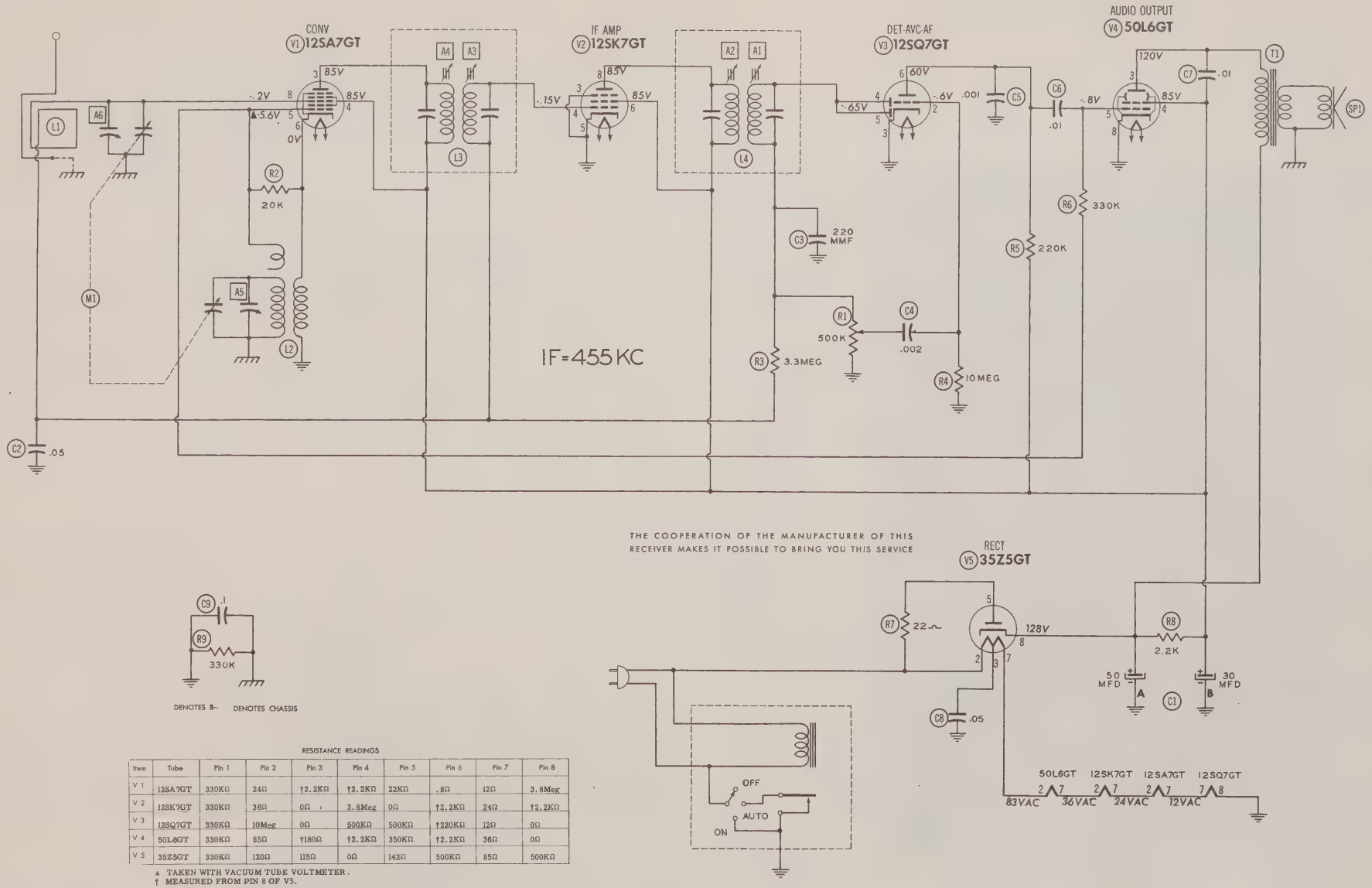
ITEM No.	PART NAME	CBS-Columbia PART No.	NOTES
M1	Tuning Capacitor	PB16112	31-462MMF, 20-185MMF

CHASSIS—BOTTOM VIEW



SET 211 FOLDER 4

CBS-COLUMBIA MODEL 540



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	330KΩ	24Ω	†2.2KΩ	†2.2KΩ	22KΩ	.8Ω	12Ω	3.8Meg
V 2	12SK7GT	330KΩ	36Ω	0Ω	3.8Meg	0Ω	†2.2KΩ	24Ω	†2.2KΩ
V 3	12SQ7GT	330KΩ	10Meg	0Ω	500KΩ	500KΩ	†220KΩ	12Ω	0Ω
V 4	50L6GT	330KΩ	85Ω	†180Ω	†2.2KΩ	350KΩ	†2.2KΩ	36Ω	0Ω
V 5	35Z5GT	330KΩ	120Ω	115Ω	0Ω	142Ω	500KΩ	85Ω	500KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 8 OF V5.

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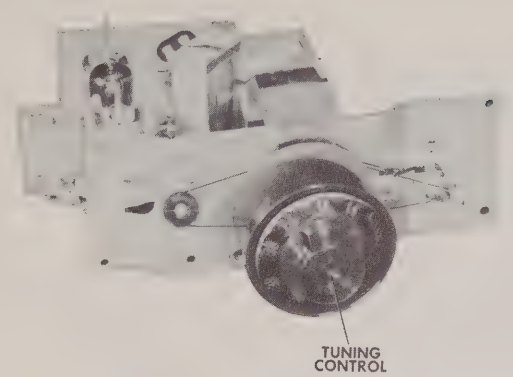
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CROSLEY
KIT PART NO. 154927 (UHF Conv.)

PROPERTY OF
L. F. BLANKENSHIP
[illegible] ST.
[illegible] COLLEGE

CROSLEY
KIT PART NO. 154927 (UHF Conv.)



TRADE NAME	Crosley Kit Part No. 154927 UHF Conv.
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	UHF Conv. Kit for use in TV Chassis 393 and 394
TUBES (Two)	Types 6AF4 Osc., 6BZ7 IF Amp.
TUNING RANGE	Channels 14 thru 83 (UHF)

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Remove the UHF Converter from the VHF receiver chassis.
Turn the UHF tuning control clockwise until the pin on the rear of the drive pulley is free from the toggle coupling.
Turn the switch throw arm clockwise to disengage fork of toggle coupling.
Set coupling arm in vertical position.
Turn the switch throw arm counter clockwise to UHF position (top contact of switch rotor will contact and center on the two top switch fingers with the red wires attached). Leave the switch in this position during alignment.
Connect the output leads of UHF converter to the RF input terminals of the VHF Tuner.
Connect B+ and filament leads of UHF Converter to VHF receiver . Connect converter chassis to receiver chassis.
Set VHF tuner to channel 6.
Use short leads during alignment.

IF ALIGNMENT

Set IF slide switch of UHF converter to channel 6 (rear position).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	.001MFD	High side to junction of C6 and mixer section of L2. Low side to chassis.	82.5MC (Unmod.)	DC probe to 2nd. detector load resistor on VHF chassis. Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	88.5MC	"	A2	Adjust for max. deflection. Repeat steps 1 & 2.

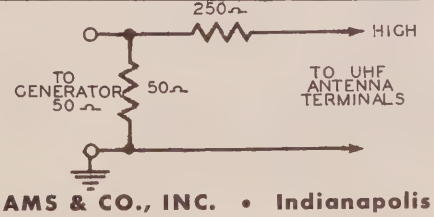
OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
3.	Fig. 1	Thru ant. matching network to UHF ant. terminals.	460MC (Unmod.)	DC probe to 2nd. detector load resistor on VHF chassis. Common to chassis.	A3	Turn tuner shaft to maximum counter clockwise position. Adjust A3 for maximum deflection.
4.	"	"	904MC	"	A4	Turn tuner shaft to maximum clockwise position. Adjust A4 for maximum deflection. Repeat steps 3 and 4 until no improvement is noted.

RF CIRCUIT ALIGNMENT

Preset A9 in counter clockwise direction for minimum capacity.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
5.	Fig. 1	Thru antenna matching network to UHF antenna terminals.	460MC (Unmod.)	DC probe to 2nd. detector load resistor on VHF chassis. Common to chassis.	A5, A6	Turn tuner shaft to maximum counter clockwise position. Adjust A5 and A6 for max. deflection.
6.	"	"	904MC	"	A7, A8	Turn tuner shaft to max. clockwise position. Adjust A7 and A8 for max. deflection. Repeat steps 5 and 6 until no improvement is noted.
7.	"	"	460MC	"	A9	Turn tuner shaft to maximum counter clockwise position and adjust A9 for maximum deflection.



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PARTS LIST AND DESCRIPTIONS

CROSLEY
KIT PART No. 154927

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		CROSLEY PART No.	STANDARD REPLACEMENT		
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2A	IF Amplifier	6BZ7	6BZ7	9AJ	
B	IF Amplifier	6BQ7	6BQ7	9AJ	
C	IF Amplifier	6BQ7A	6BQ7A	9AJ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	100		144675-27	BPD-0001	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C2	1.5		152997-3	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C3	2.2		152997-1		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C4	.68		152997-6		TCZ-.68		NP0K-R68			Note 1
C5	.8-6.5		151880-2							
C6	3.3		152997-4	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C7	3.3		152997-4	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C8	.8-6.5		151880-2							Note 2
C9	1.0		152997-2		TCZ-1		NP0K-010		5TCCB-V1	
C10	2.2		152997-1		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C11	68		152997-8		TCZ-68				5TCC-Q68	
C12	12		155077-1							Note 3
C13	2-7		154777-1							
C14	27		137727-136							
C15	470		137727-104	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C16	1000		154808							
C17	1500		137727-113	SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C18	68		152997-8		TCZ-68				5TCC-Q68	
C19	18		137727-66	SI18	D6-180		GP1K-180	UC-5418	5GA-Q18	
C20	330		137727-129	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C21	100		144675-27	BPD-0001	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C22	330		137727-129	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C23	330		137727-129	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	

RESISTORS

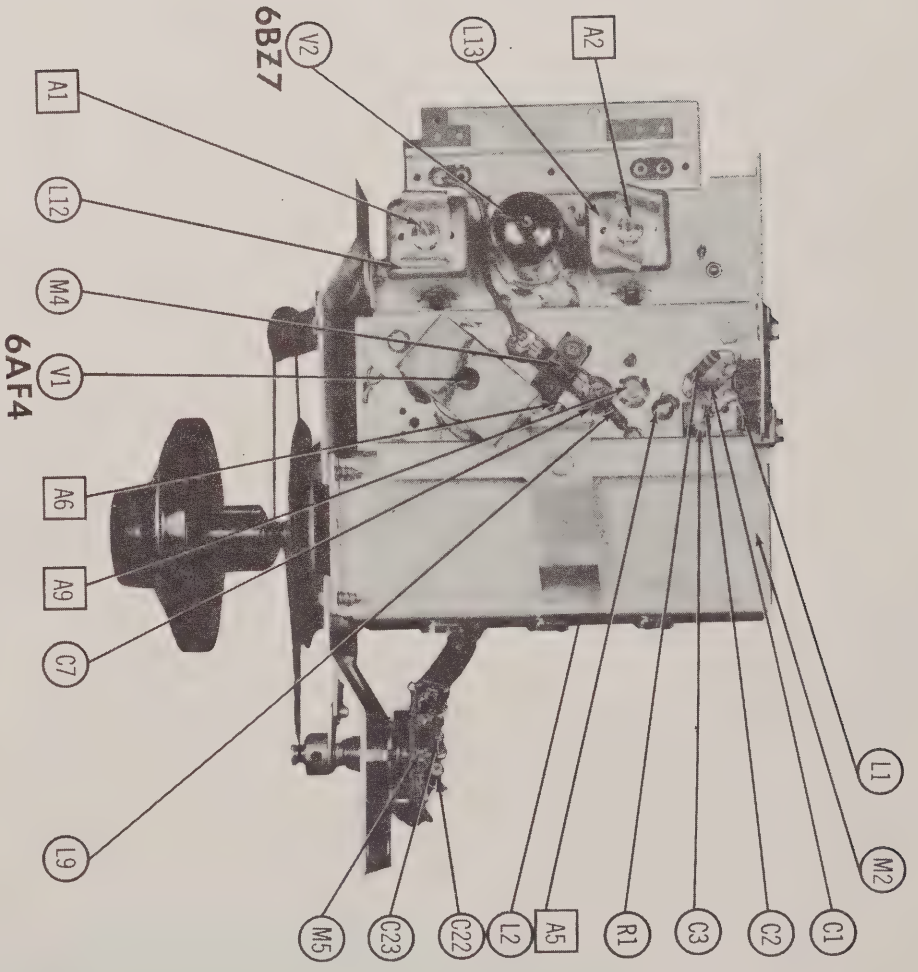
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CROSLEY PART No.	IRC PART No.	
R1	470KΩ	½	39374-57	BTS-470K	
R2	10KΩ	½	39374-37	BTS-10K	
R3	22KΩ	2	39374-217	BTB-22K	
R4	47KΩ	1	39374-133	BTA-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CROSLEY PART No.	IRC PART No.	
R5	82Ω	½	39374-12	BTS-82	
R6	470KΩ	½	39374-57	BTS-470K	
R7	68Ω	½	39374-11		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	RF Choke	.59Ω		148936-2	19-3001	TV-189	6175	.82 microhenry, (IRC part #CLA)
L2	UHF Ant., Mixer & Osc. Coils	0Ω						Part of Inductuner M2
L3	UHF Ant. Coil End Inductor	0Ω		151880-2				Includes C5

CHASSIS—TOP VIEW



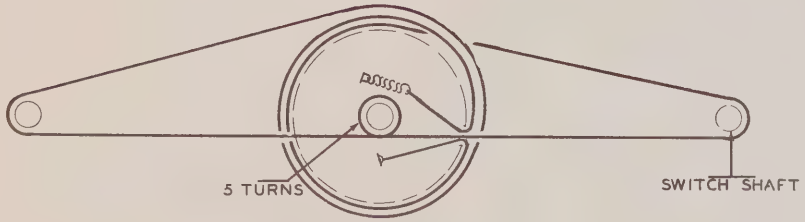
PARTS LIST AND DESCRIPTIONS (Continued)

COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CROSLEY PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L4	UHF Mixer Coil End Inductor	0Ω		151880-2				Includes C8
L5	UHF Osc. Coil End Inductor	0Ω		154777-1				Includes C13
L6	Parasitic Choke	0Ω		154788				.182 Microhenry
L7	Fil. Choke	.1Ω		151912				Wound on 330Ω resistor
L8	RF Choke	.1Ω		153286				.512 Microhenry, wound on 820Ω resistor
L9	Parasitic Choke	0Ω		154847				.143 Microhenry
L10	RF Choke	.85Ω		148936-4			4602	1.2 Microhenries, (IRC part #CLA)
L11	RF Choke	0Ω		154789				.105 Microhenry
L12	UHF IF Input Coil	.1Ω		154759				
L13	UHF IF Output Coil	.1Ω		154760				
L14	RF Choke	0Ω		154788				.182 Microhenry
L15	RF Choke	.85Ω		148936-4			4602	1.2 Microhenries, (IRC part #CLA)

MISCELLANEOUS

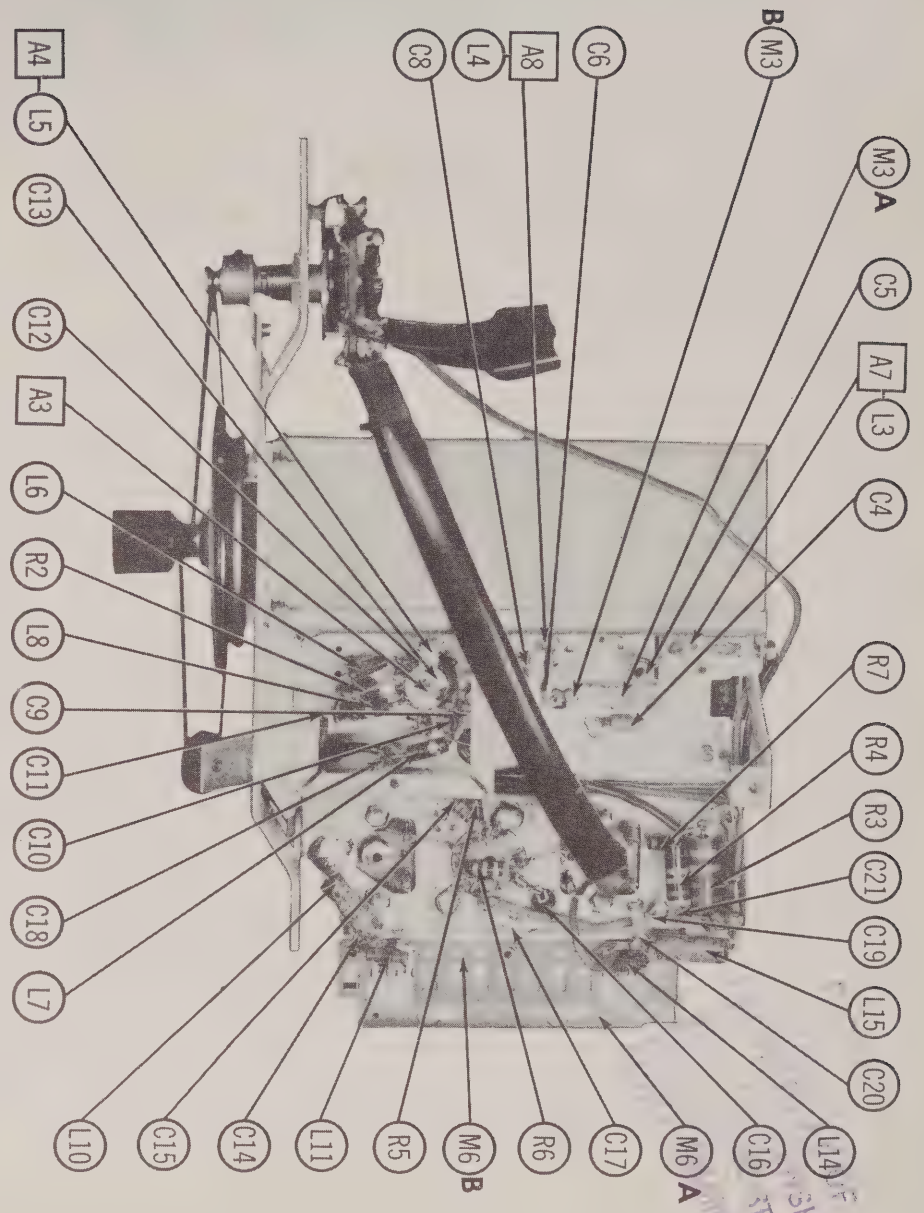
ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M1	UHF Converter	154927	Complete
M2	Inductuner	154711	Includes L2, two 22Ω resistors and a 390Ω resistor
M3 A	Stator (RF Trimmer)	153835	
B	Rotor (RF Trimmer)	151890	
M4	Crystal Diode	151871	(Germanium)
M5	Switch	154721	Function Selector
M6A	Switch (Slide Unit)	154728	Conversion Freq. Sel. (Channels 5 or 6)
B	Switch (Body Unit)	154727	Conversion Freq.Sel. (Channels 5 or 6)



TUNER FULLY COUNTERCLOCKWISE

DIAL CORD DRIVE

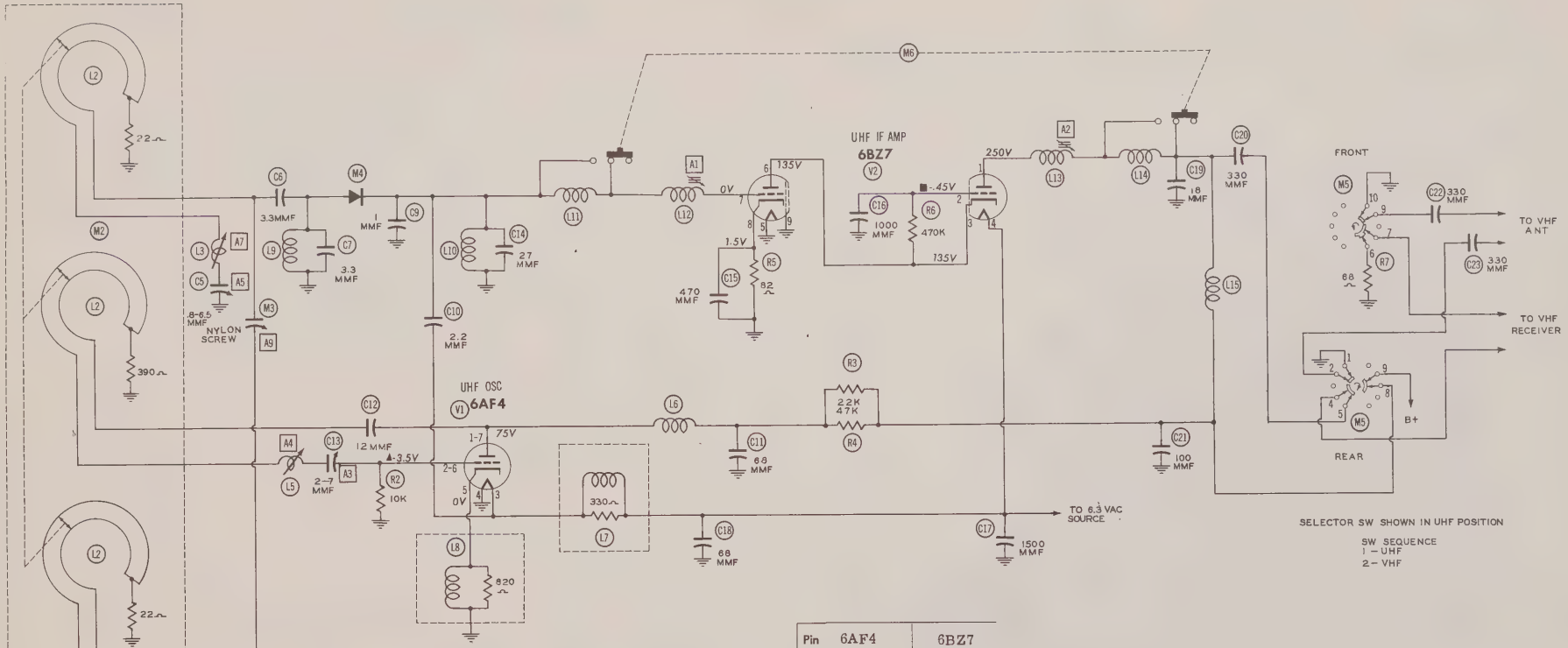
CHASSIS—BOTTOM VIEW



CROSLEY
KIT PART No. 154927

SET 211 FOLDER 5

CROSLEY
KIT PART No. 154927



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

Pin No.	6AF4 Res.	6BZ7 Res.
1	†15KΩ	†1.8Ω
2	10KΩ	INF
3	.1Ω	INF
4	0Ω	.1Ω
5	.1Ω	0Ω
6	10KΩ	INF
7	†15KΩ	1.8Ω
8		82Ω
9		0Ω

■ MEASURED FROM PIN # 3 OF V2.
VOLTAGE MEASUREMENTS TAKEN WITH 250VDC INPUT
† MEASURED FROM JUNCTION OF L15 and R3.
▲ TAKEN WIHT VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
F. B.
324
ER, C

GENERAL ELECTRIC
MODELS 412F, 414F, 415F, 416F

GENERAL ELECTRIC
MODELS 412F, 414F, 415F, 416F

GENERAL ELECTRIC MODEL 415F

TRADE NAME	General Electric Models 412F, 414F, 415F, 416F
MANUFACTURER	General Electric Co., Eletronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC/DC Operated Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE--BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12BA6 (V2). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	"	"	"	A3, A4	Adjust for maximum output. Recheck adjustment of A1 and A2.
3.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1500KC	Tune to 1500KC signal	"	A6	Adjust for maximum output while rocking tuning gang. Set dial pointer to 150.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		General-Electric PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	RCE-127	PRS150/50-50		EDL5515		2N521	TVA-2453	Red
B	50	150								Yellow
C2	.05	400	UCC-045	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	47		RCW-3075							
C4A	400		♦ RCW-3048	SI390	D6-401		GP2K-391	UC-5339	♦34C3	
B	.002			BPD-002	D6-202		801-002	DC-522		
C	220			SI220	D6-221		GP2K-221	UC-5322		
D	.005			BPD-005	MD-502		811-005	DC-525		
C5	.02	600	UCC-041	P688-02	DD-203	PTE6S2		PT612	6TM-S2	
C6	.047	600	RCN-053	689ZX-05		PJ6S5		PT615	6TM-S47	
C7	.05	400	UCC-045	P488-05	DF-503	PTE4S5		PT415	4TM-S5	

♦ Items C4A, C4B, C4C, C4D are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	General-Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RRC-203	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume-Note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

Note. Model No. 412F used an alternate control part No. RRC-204.

RESISTORS

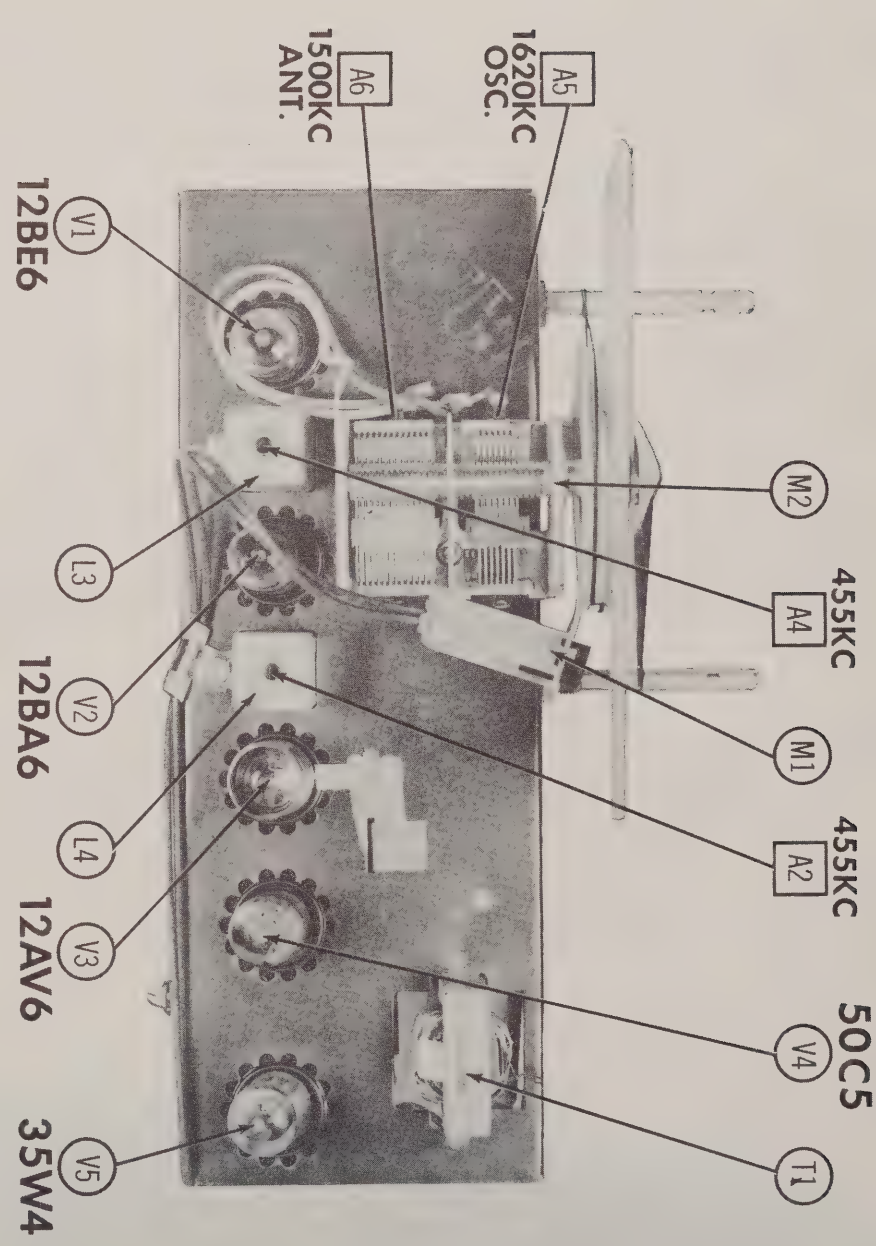
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General-Electric PART No.	IRC PART No.	
R2	22KΩ	½	URD-081	BTS-22K	
R3	100Ω	½	URD-025		
R4	68Ω	½	URD-021	BTS-68	
R5	2.2Meg	½	URD-129	BTS-2.2Meg	
R6	6.8Meg	½	URD-141	BTS-6.8Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General-Electric PART No.	IRC PART No.	
R7	470KΩ	½	URD-113	BTS-470K	
R8	1 Meg	½	URD-121	BTS-1 Meg	
R9	150Ω	½	URD-029	BTS-150	
R10	1500Ω	2	URF-053	BTB-1500	
R11	18Ω	½	URD-007		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3.5Ω	210Ω	.54Ω	RTO-128	A-3332	A-3025	RO-302 ①	S-1X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

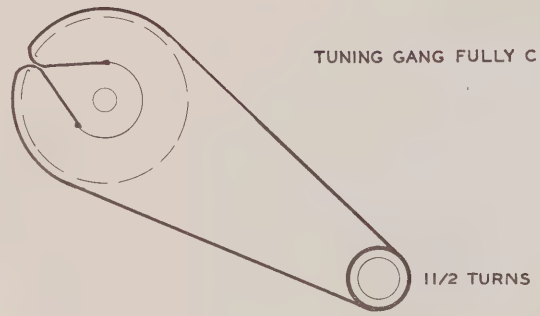
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	General Electric PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	S-403D-7	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		RAB-202				G.E. part # includes cabinet back and applies to Models 414F, 415F & 416F. Model 412F uses part #RAB-203 in this application.
L2	Osc. Coil	.5Ω	6.5Ω	RCL-122				
L3	Input IF	15Ω	15Ω	RTL-143	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15Ω	RTL-143	16-6758	BC-353	12-C2	

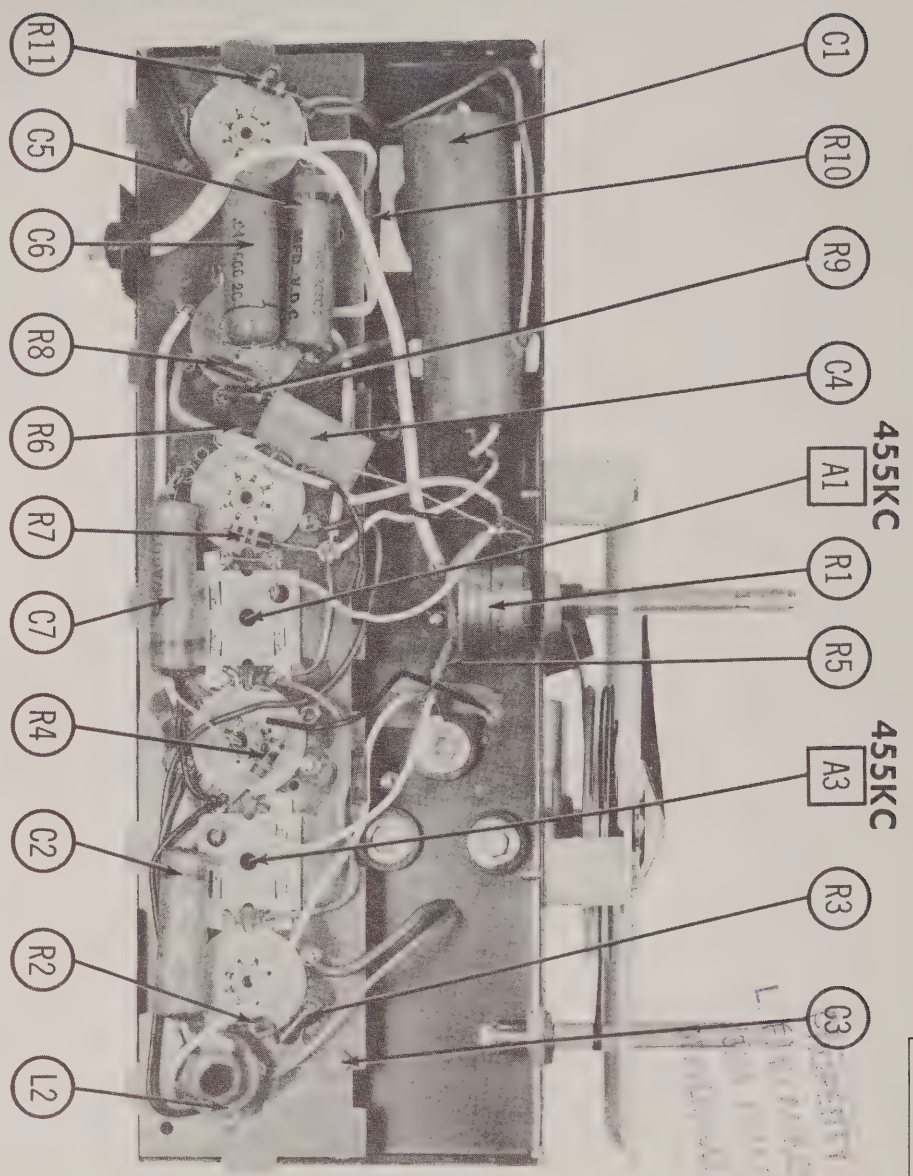
MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M1	Dial Lamp		Type #47
M2A	Tuning Capacitor	RCT-058	32-437MMF, 24-150MMF, Models 414F, 415F and 416F
B	Tuning Capacitor	RCT-037	Model 412F
	Cabinet	RAU-363	Model 412F
	Cabinet	RAU-352	Model 414F
	Cabinet	RAU-350	Model 415F
	Cabinet	RAU-375	Model 416F
	Scale (Dial)	RDS-118	Model 412F
	Scale (Dial)	RDS-109	Models 414F, 415F and 416F
	Pointer	RDP-073	Model 412F
	Pointer	RDP-063	Models 414F, 415F and 416F
	Window	RDW-021	Model 412F
	Window	RDW-052	Models 414F, 415F and 416F
	Knob	RDK-174	OFF/ON Volume Tuning, Model 412F
	Knob	RDK-260	OFF/ON Volume, Tuning, Models 414F, 415F and 416F

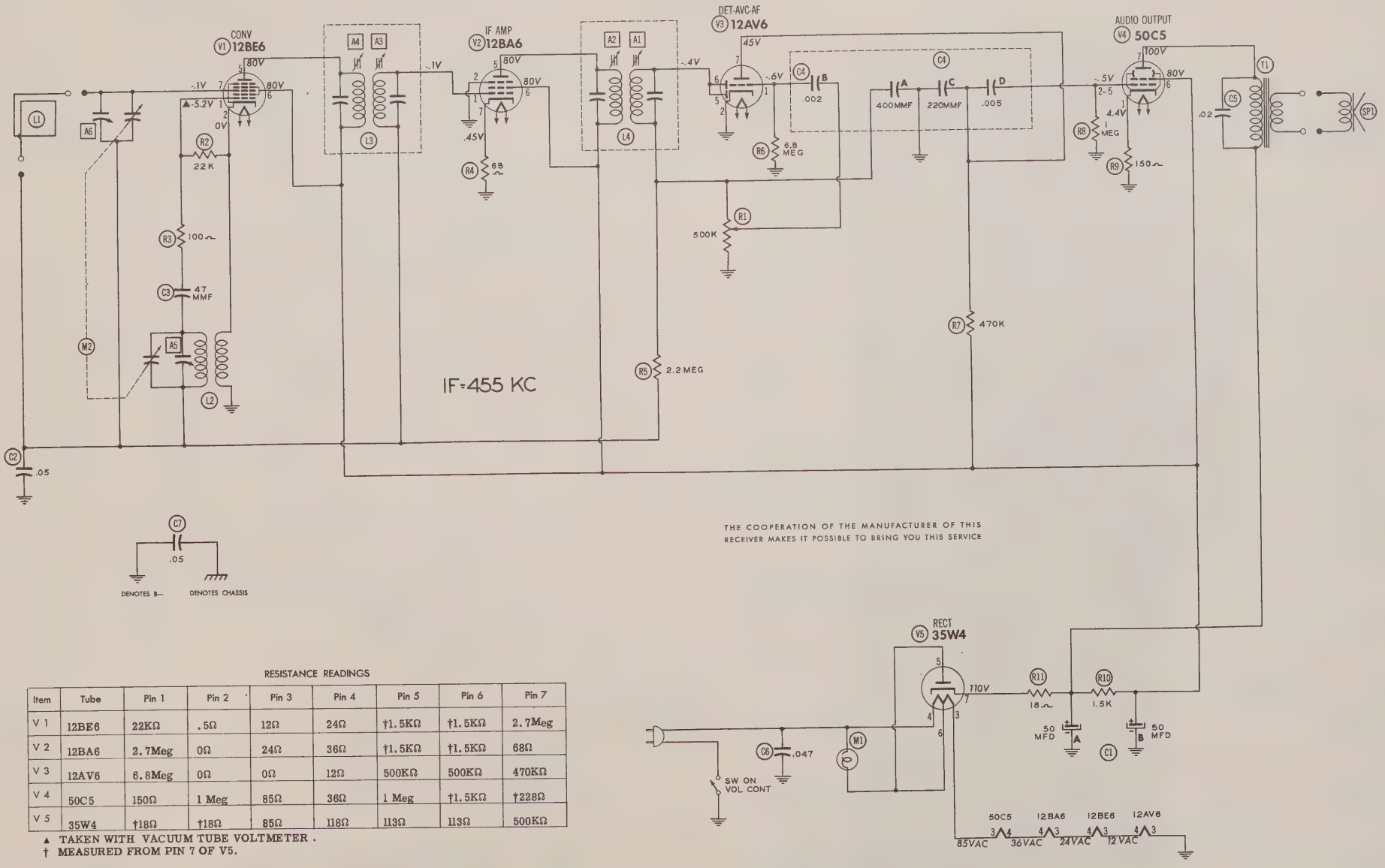


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 412F



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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	470KΩ
V 4	50C5	150Ω	1 Meg	85Ω	36Ω	1 Meg	†1.5KΩ	†228Ω
V 5	35W4	†18Ω	†18Ω	85Ω	118Ω	113Ω	113Ω	500KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER .
† MEASURED FROM PIN 7 OF V5.

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211-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

HALLICRAFTERS MODELS 1050, A (Ch. AL1200D), 1072, 4, 5, 8 (Ch. AG1200D), 1072A, 1074A, 1075A, 1078A (Ch. AR1200D, Run 1), 1074AT, 1075AT, 1078AT (Ch. AY1200D), 1077 (Ch. AH1200D), 1081, A, 1085, A, 1088, A (Ch. AJ1200D)

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MODEL 1075A

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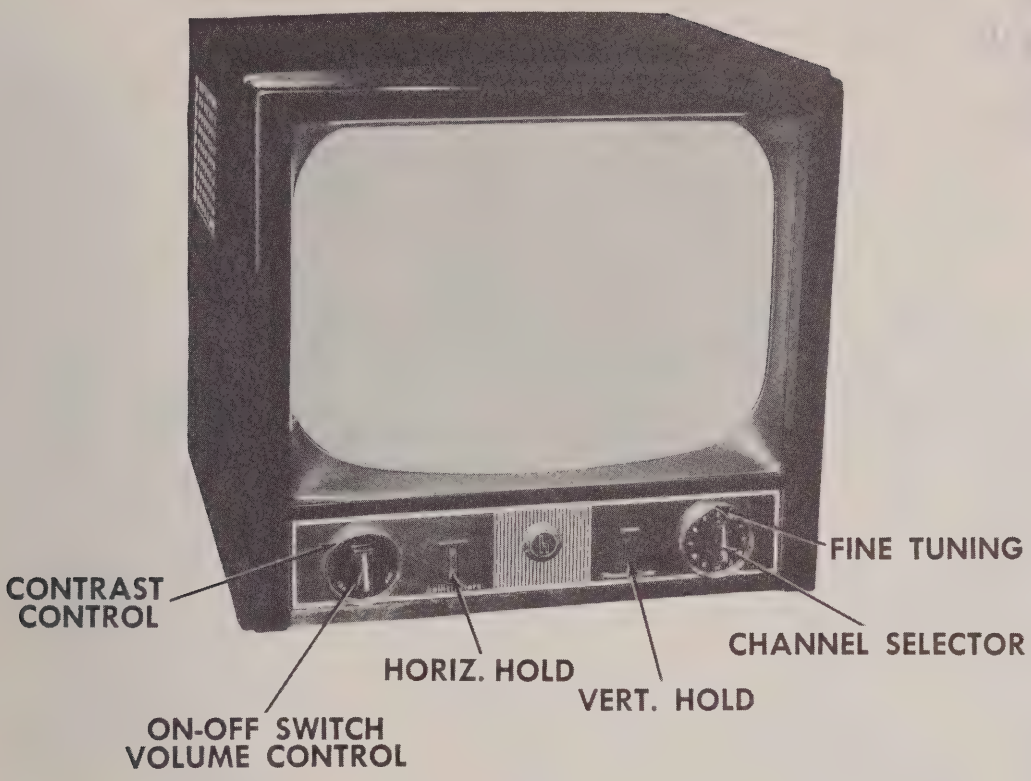
HALLICRAFTERS MODELS

1050, A (Ch. AL1200D), 1072, 4, 5, 8 (Ch. AG1200D), 1072A, 1074A, 1075A, 1078A (Ch. AR1200D, Run 1), 1074AT, 1075AT, 1078AT (Ch. AY1200D), 1077 (Ch. AH1200D), 1081, A, 1085, A, 1088, A (Ch. AJ1200D)



HALLICRAFTERS MODEL 1075A

TRADE NAME	Hallicrafters	Models	Chassis
		1050, 1050A	AL1200D
		1072, 1074, 1075	AG1200D
		1072A, 1074A, 1075A	AR1200D (Runl 1)
		1077	AH1200D
		1078	AG1200D
		1078A	AR1200D (Run 1)
		1074AT, 1075AT, 1078AT	AY1200D
		1081, 1081A, 1085A, 1088, 1088A	AJ1200D
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Illinois		
TYPE SET	Television Receiver		
TUBES	Eighteen		
POWER	110-120 Volts AC-60 Cycle	RATING	1.16 Amp @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 26.25MC, Sound IF 21.75MC (Intercarrier).		

INDEX

Alignment Instructions 6, 7
Comparison of 1200D series Chassis 14, 19
Disassembly Instructions 20
Horizontal Sweep Circuit Adjustments 13
Parts List and Descriptions 16, 17, 18
Photographs
Cabinet-Rear View 13
Capacitor Identification 4, 9
Chassis-Top View 3
RF Tuner 10
Photographs (Cont)
Resistor Identification 11, 22
Trans., Inductor and Alignment Identification 15
Resistance Measurements 8
Servicing in the Field 20
Schematic 2
Trouble Shooting Aids 12, 21
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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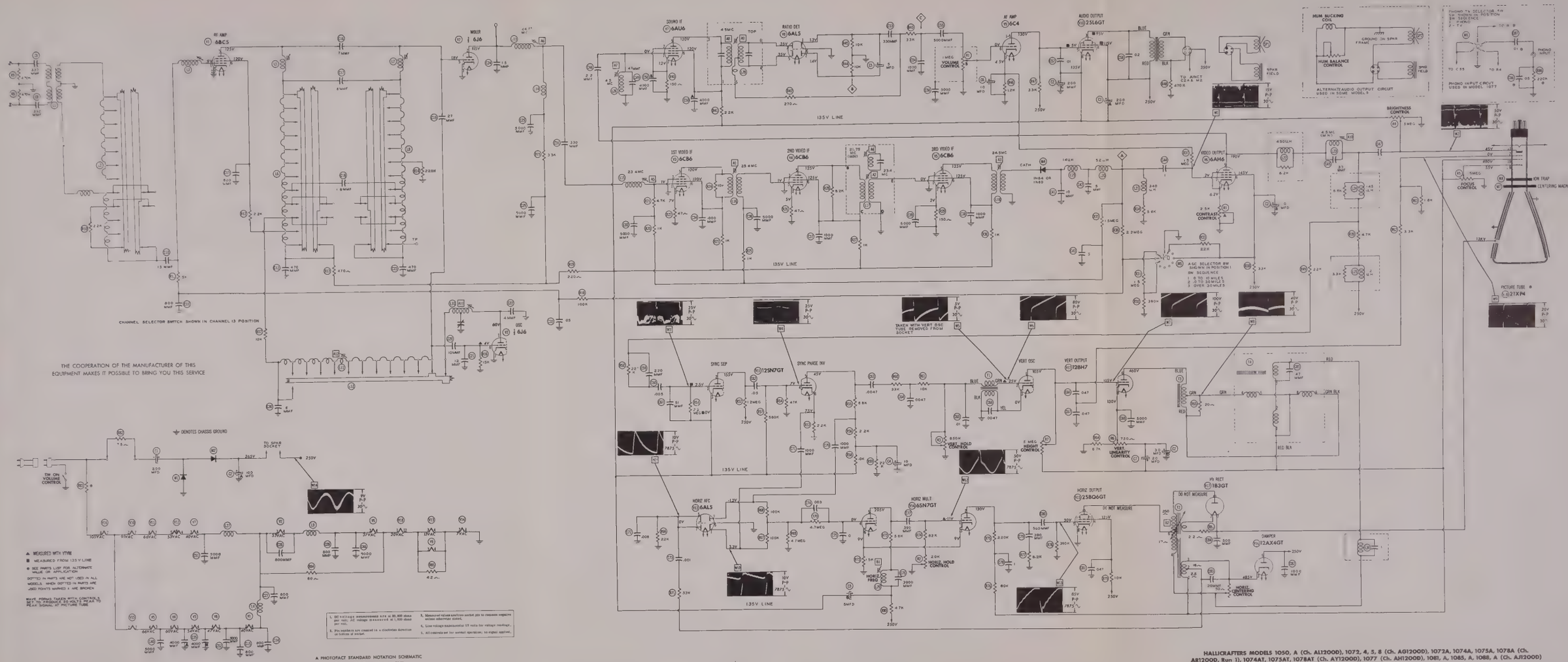

HALLICRAFTERS MODELS 1050, A (Ch. AL1200D), 1072, 4, 5, 8 (Ch. AG1200D), 1072A, 1074A, 1075A, 1078A (Ch. AR1200D, Run 1), 1074AT, 1075AT, 1078AT (Ch. AY1200D), 1077 (Ch. AH1200D), 1081, A, 1085, A, 1088, A (Ch. AJ1200D)

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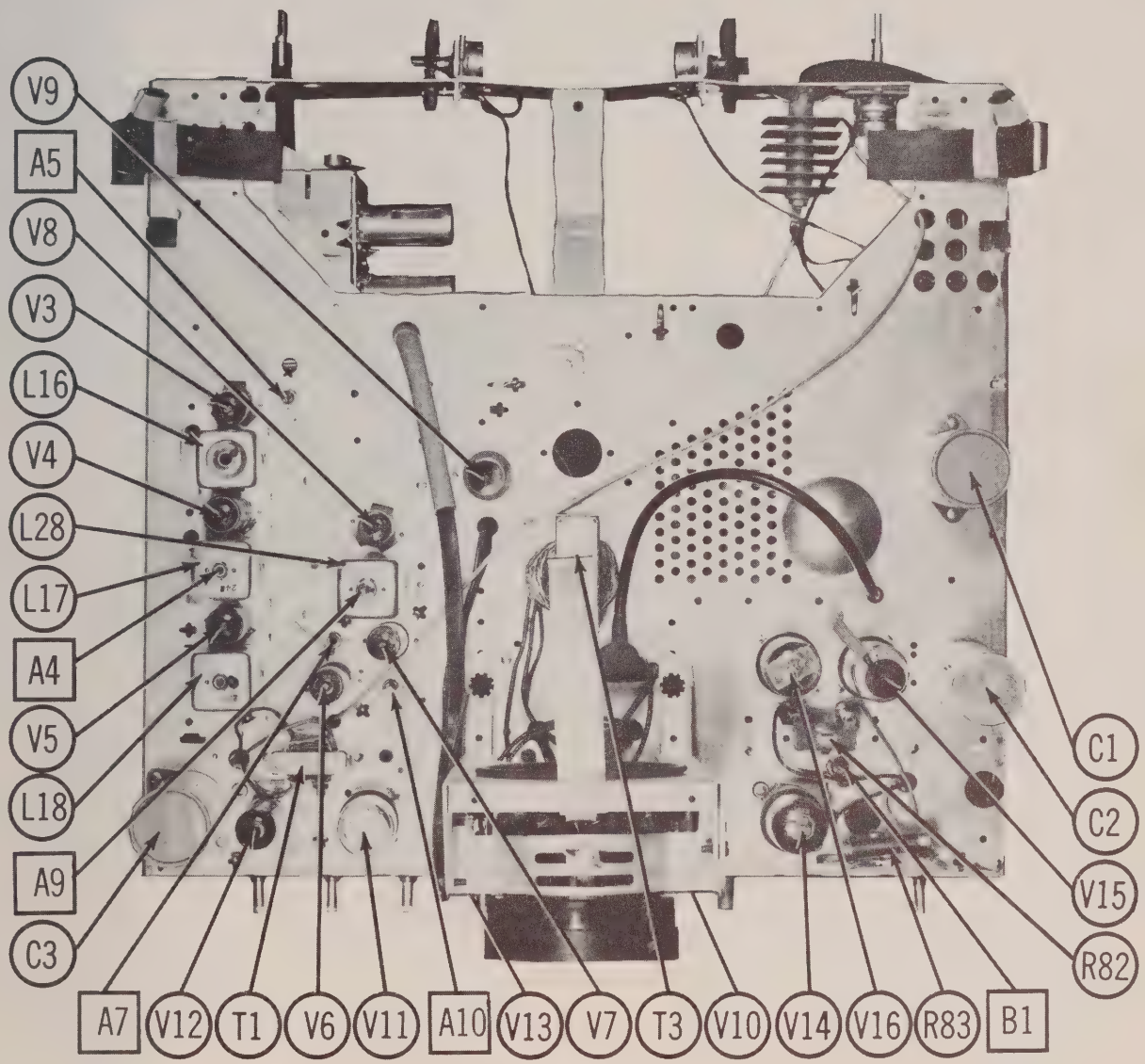
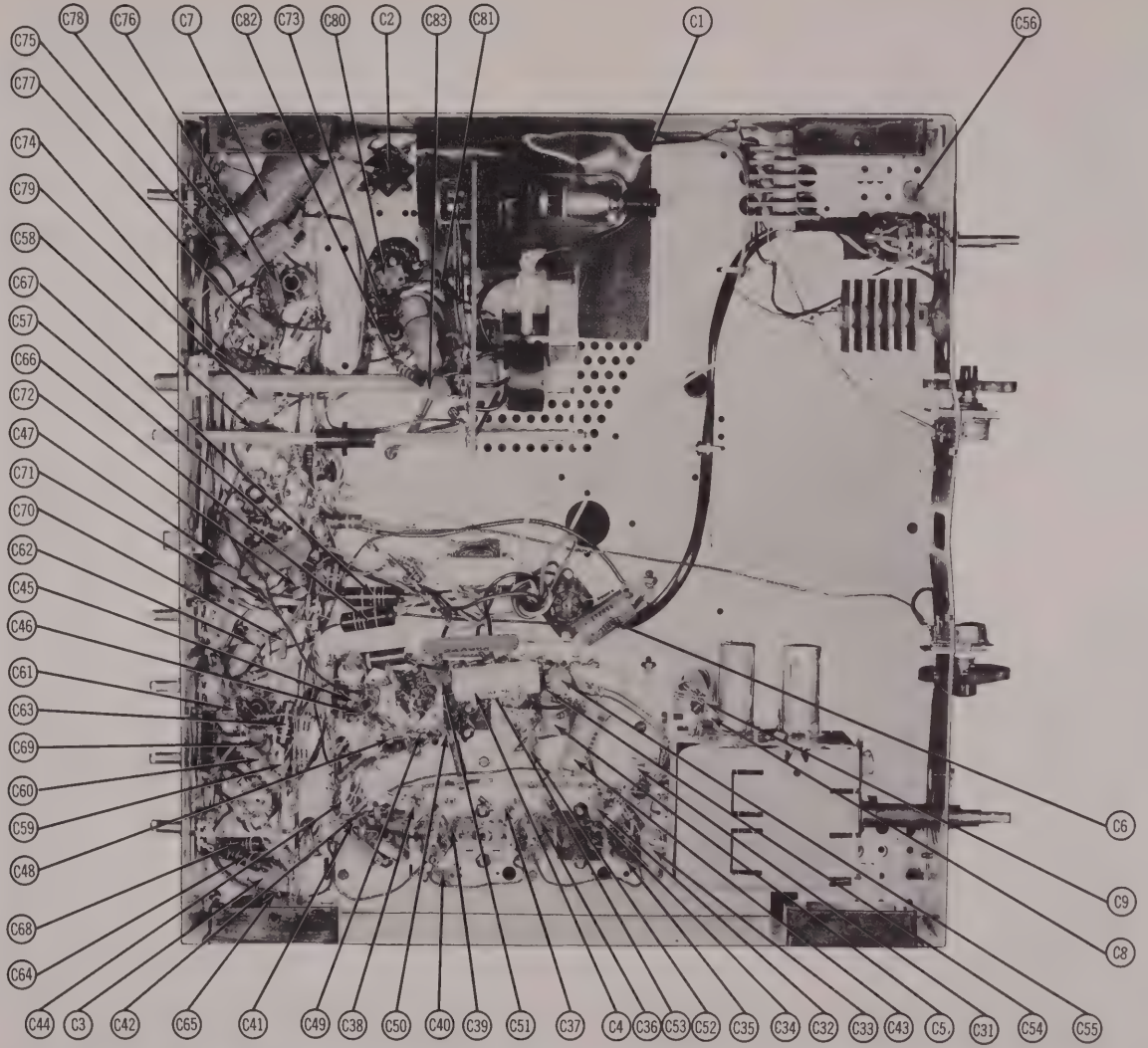
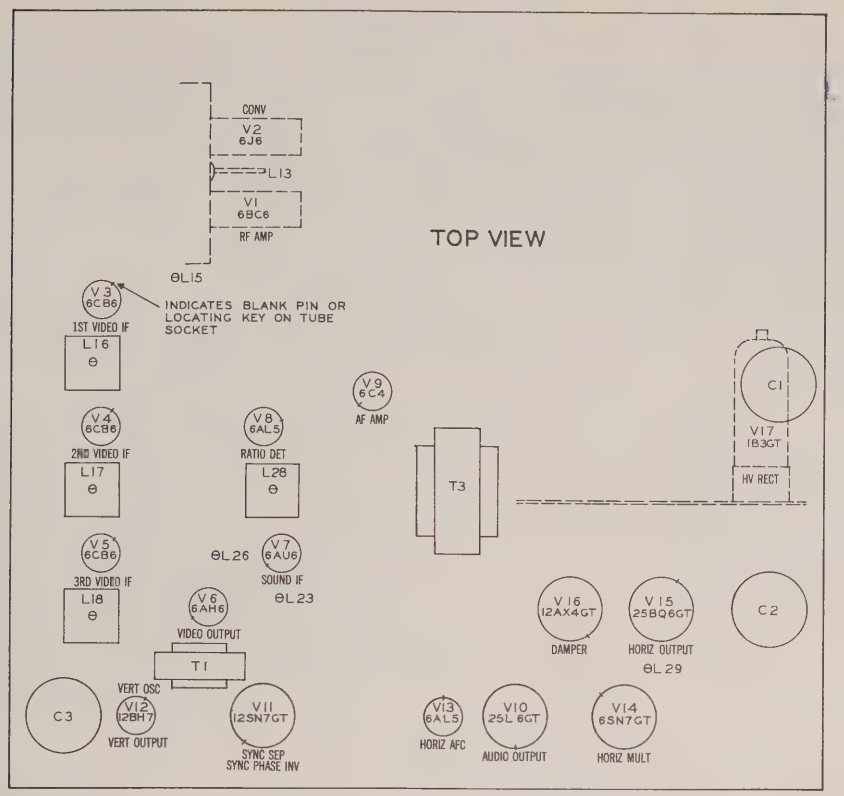


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

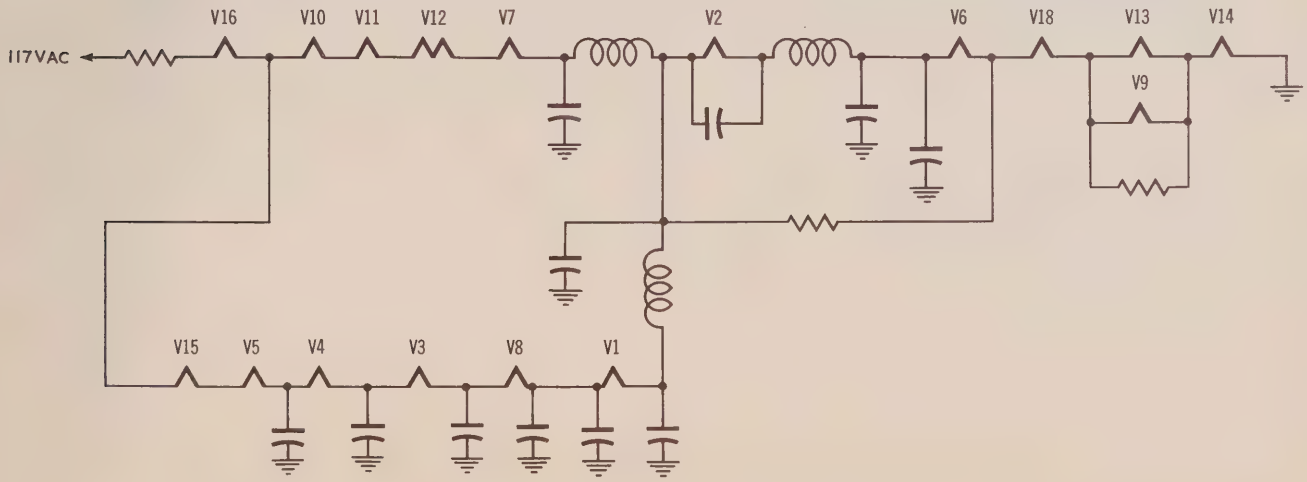
POWER SUPPLY FAILURE
No raster, no sound - Sel. Rect. (M1, M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V18
Has pic, no sound - V7, V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12
No horiz. sync - V11, V13, V14
No vert. or horiz. sync - V11

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V18
No vertical deflection - V12
Poor vert. linearity or foldover - V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, M1, M2
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V13, V14

Note: Since this receiver employs tubes used in a series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See Circuit Below).



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage. Use an isolation transformer to protect the test equipment.
Where alignment requires the adjustment of cores which have been sealed by wax this wax can be softened by means of a heated screwdriver or small pencil type soldering iron. After adjustment the cores should be resealed.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C43. Connect the positive lead to chassis.
Set the AVC switch at the 0-10 mile position. (fully counter clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.4MC	Any	DC probe thru 47KΩ to point ◇A◇. Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator to maintain approximately 2 volts at VTVM.
2.	"	"	23.4MC	"	"	A2	"
3.	"	"	24.5MC	"	"	A3	"
4.	"	"	21.75MC	"	"	A4	Adjust for MINIMUM deflection.
5.	"	"	23.4MC	"	"	A2	Adjust for maximum deflection.
6.	"	"	24.75MC	"	"	A5	On chassis using 1E1492 Pentode or 1E1376 Cascode tuners connect a 470Ω resistor in series with .01MFD capacitor from pin 2 (plate) of V2 to chassis. This point is accessible as a test point on top of tuner. Adjust A5 for maximum deflection. Remove the 470Ω resistor and .01MFD capacitor.
7.	"	"	"	"	"	A6	On chassis using 1E1492 Pentode or 1E1376 Cascode tuners connect a 470Ω resistor in series with .01MFD capacitor from pin 1 (grid) of V3 to chassis. Adjust A6 for maximum deflection. Remove the 470Ω resistor and .01MFD capacitor.

OVERALL VIDEO IF RESPONSE CHECK

Leave bias battery connected as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.75MC 22.75MC 23.4MC 25.25MC 26.25MC	Any	Vert. Amp. to point ◇A◇. Low side to chassis.		Check for response similar to Fig. 1. Response curve should be slightly tilted as shown to compensate for the capacitive coupling of the sweep generator. If necessary retouch A1, A2 and A3 for desired response. A3 affects principally the tilt. A1 affects the 26.25MC marker placement A2 affects the slope of the curve between 21.75MC and 23.4MC and the placement of 22.75MC marker.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set contrast control to minimum.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.005MFD	High side to point ◇A◇. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point ◇B◇. Common to chassis.	A7, A8	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point ◇C◇. Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Set contrast control to minimum.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.005MFD	High side to point ◇A◇. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point ◇B◇. Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
10.	"	"	"	"	"	Vert. Amp. to point ◇C◇. Low side to chassis.	A9	Reconnect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.005MFD	High side to point ◇A◇. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (fig. 4) to pin 11 of picture tube. Common to chassis.	A10	Adjust for MINIMUM deflection.

ALIGNMENT INSTRUCTIONS (CONT.)

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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A11	Adjust to place sound marker in notch as in Fig. 5. Video marker should be at 50% on response curve.
13.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check high band channels for correct marker placement as in Fig. 5. If necessary make slight compromise adjustment of A11 for best marker placement on all channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
14.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A12	Adjust to place sound marker in notch as in Fig. 5. Video marker should be at 50% on response curve.
15.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check low band channels for correct marker placement as in Fig. 5. If necessary make slight compromise adjustment of A12 for best marker placement on all channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

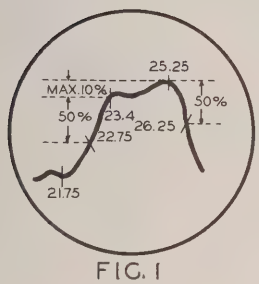


FIG. 1

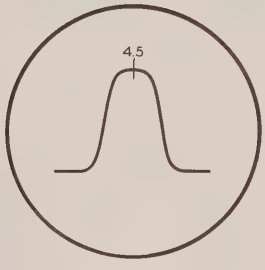


FIG. 2

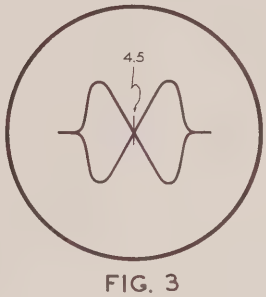


FIG. 3

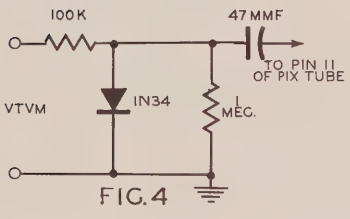


FIG. 4

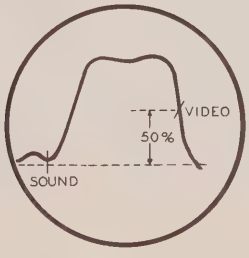
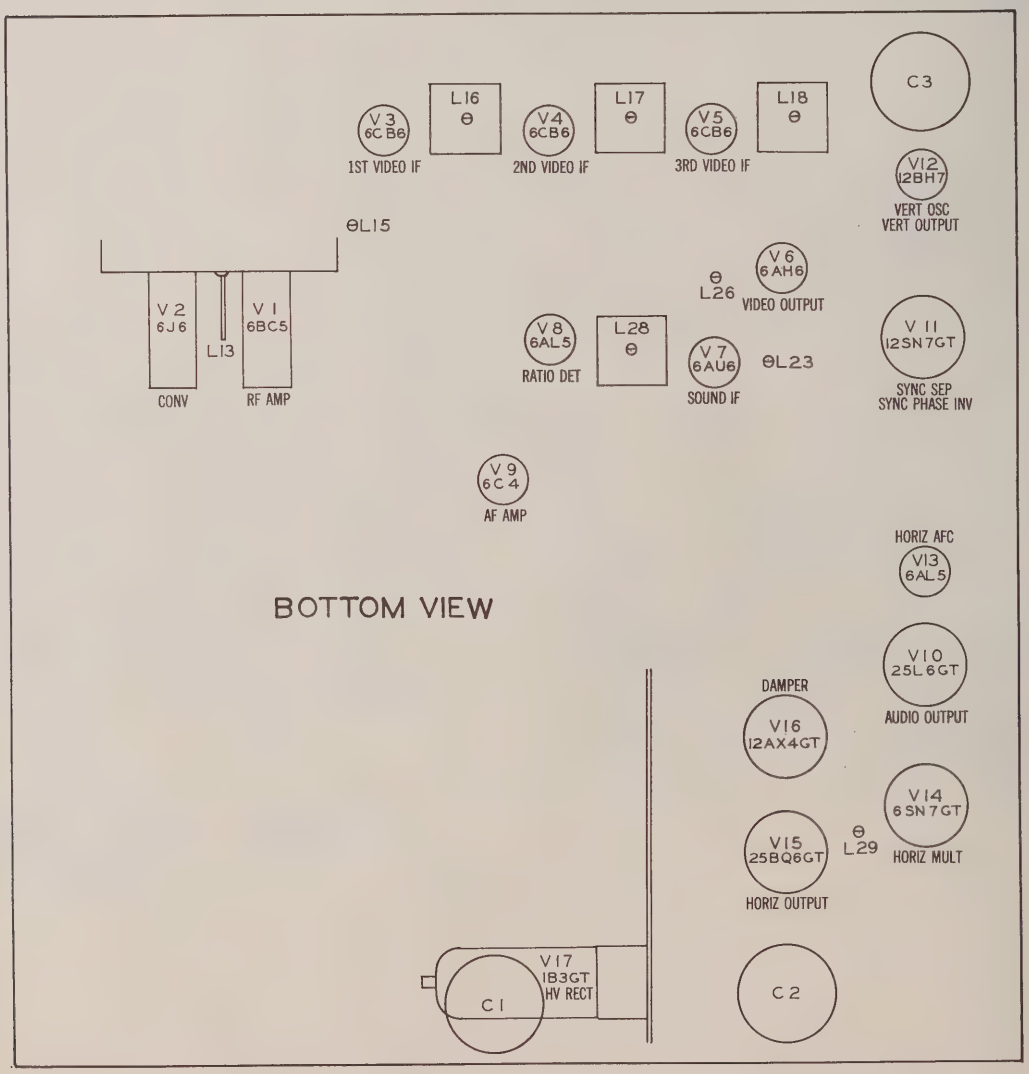


FIG. 5

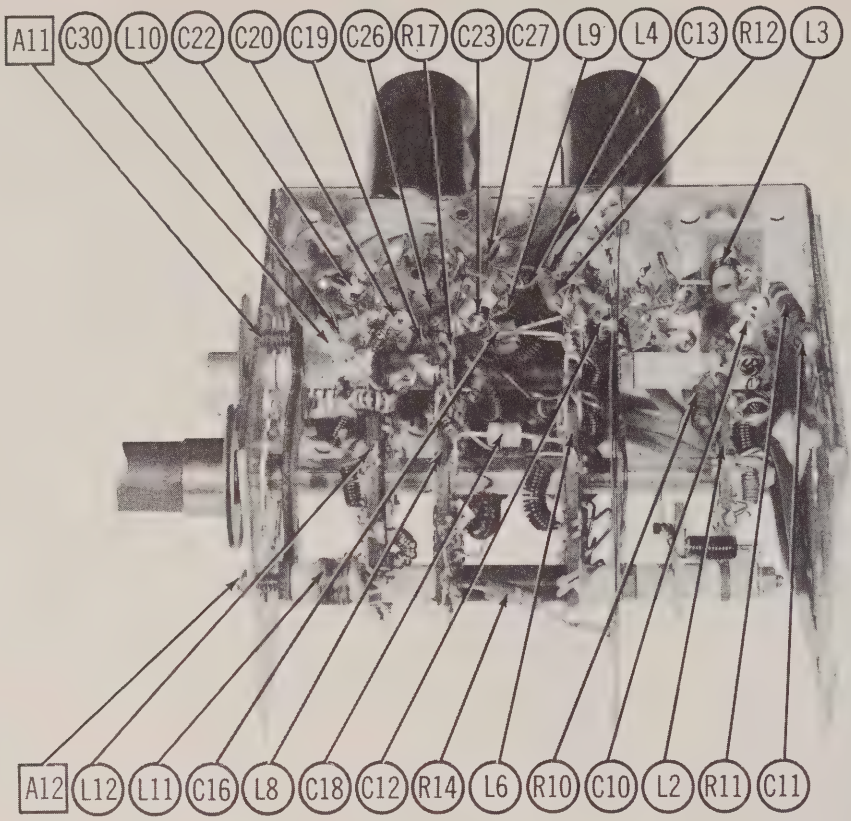
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2.3Meg	0Ω	14Ω	10.4Ω	■690Ω	■3KΩ	0Ω		
V 2	6J6	■10.7KΩ	■3.5KΩ	10.4Ω	8.2Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	1.5Meg	47Ω	18Ω	16.2Ω	■1KΩ	■1KΩ	0Ω		
V 4	6CB6	1.5Meg	47Ω	18Ω	20.5Ω	■1KΩ	■1KΩ	0Ω		
V 5	6CB6	.3Ω	150Ω	20.5Ω	23Ω	■1KΩ	■1KΩ	0Ω		
V 6	6AH6	1.5Meg	210Ω	8.2Ω	6Ω	†4.7KΩ	†33KΩ	210Ω		
V 7	6AU6	1.1Ω	150Ω	14.5Ω	10.4Ω	■2.2KΩ	■2.2KΩ	150Ω		
V 8	6AL5	10KΩ	10KΩ	14Ω	16.2Ω	INF	0Ω	INF		
V 9	6C4	†33KΩ	INF	4.2Ω	2.5Ω	†33KΩ	20Ω	1.2KΩ		
V 10	25L6GT	†4.7KΩ	28Ω	†285Ω	†65Ω	†33KΩ	4.7Meg	26Ω	30KΩ	
V 11	12SN7GT	■2.2Meg	†1.2Meg	■0Ω	45KΩ	■18KΩ	2.2KΩ	21Ω	26Ω	
V 12	12BH7	‡2.6Meg	500KΩ	50Ω	14.5Ω	21Ω	‡755Ω	‡2.6Meg	9KΩ	17.5Ω
V 13	6AL5	4.8Meg	4.8Meg	4.2Ω	2.5Ω	22KΩ	0Ω	22KΩ		
V 14	6SN7GT	165KΩ	‡400KΩ	1.5KΩ	9.4Meg	†10.5KΩ	1.5KΩ	2.5Ω	0Ω	
V 15	25BQ6GT	INF	28Ω	‡400KΩ	†10.1KΩ	390KΩ	22KΩ	23Ω	0Ω	Top Cap ‡50Ω
V 16	12AX4GT	INF	‡58Ω	1.3Meg	INF	†65Ω	‡33KΩ	28Ω	30.5Ω	
V 17	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ‡300Ω
V 18	21XP4	6Ω	1.8KΩ	Pin 6 170KΩ	Pin 10 ‡18.5KΩ	Pin 11 420KΩ	Pin 12 4.2Ω			

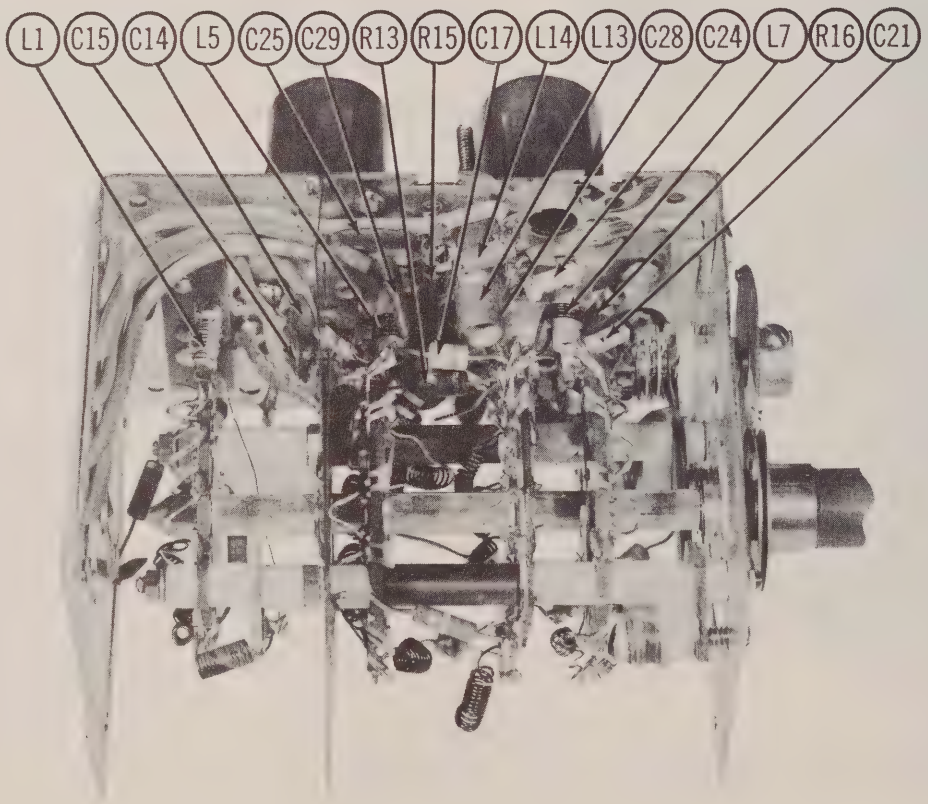
■ MEASURED FROM 135 VOLT LINE.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V16.



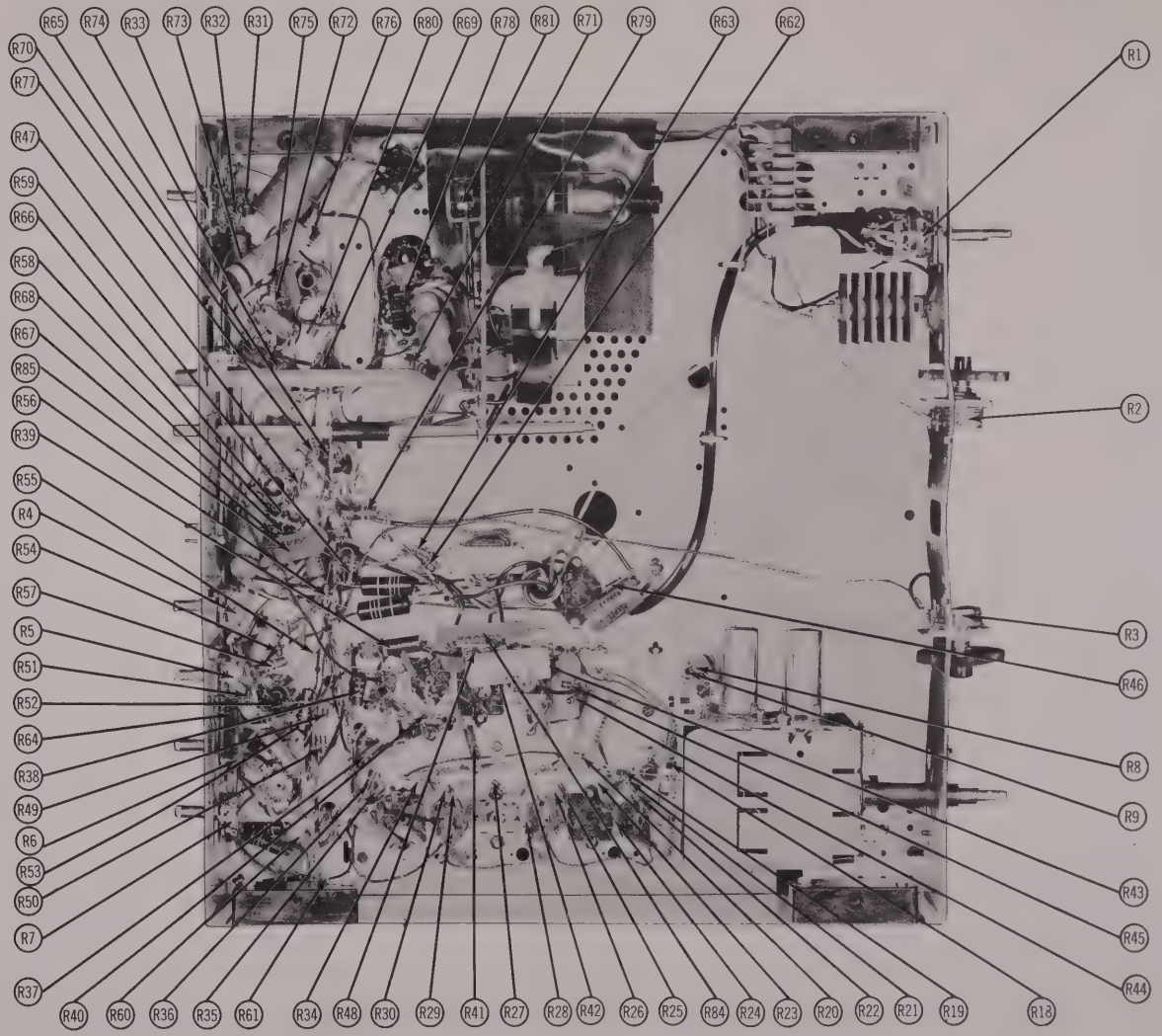
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check yoke for shorted turns. See LOSS OF HIGH VOLTAGE.

INSUFFICIENT SWEEP

Check by substitution, V14, V15 and V16. Check waveform W13;

If Unsatisfactory	If Satisfactory
Check all components of horizontal oscillator.	Check components of horizontal output stage. Check T2 and T4A particularly. Check damper circuit components.

DRIVE LINES

Substitute V14 and V15. Check coupling and waveshaping network between V14 and V15.

COMPRESSED AT LEFT SIDE

Substitute V15 and V16. Check coupling and waveshaping network between V14 and V15. Check damping circuit components.

FOLDS

Substitute V15 and V16. Check T2, T4A and associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V12. Check waveform W7 and W8;

If Unsatisfactory	If Satisfactory
Check all components of vertical oscillator, particularly T1 and C68.	Check components of vertical output stage especially T3 and T4B.

INSUFFICIENT SWEEP

Follow procedure outlined under LOSS OF SWEEP.

COMPRESSED AT BOTTOM

Substitute V12. Check cathode circuit components of vertical output stage.

FOLDS

Substitute V12. Check T3 and T4B. Check waveshaping network in plate circuit of vertical oscillator.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution, V11, V13 and V14. Check waveform W10;

If Unsatisfactory	If Satisfactory
Check all components of V11. Check coupling networks between V6 and V11 and between V11 and V13.	Check all components of horizontal AFC and oscillator circuits, especially the feedback network.

CRITICAL SYNC

Check by substitution, V11, V13 and V14. Follow procedure outlined under LOSS OF SYNC.

PULLING

Substitute V11 and V13. Check AFC filter network.

VERTICAL

LOSS OF SYNC

Substitute V11 and V12. Check waveforms W5 and W6;

If Unsatisfactory	If Satisfactory
Check components of sync clipper and integrating network and coupling circuit between clipper and integrating network.	Check all components of vertical oscillator particularly T1 and C68.

CRITICAL SYNC

Substitute V11 and V12. Follow procedure outlined under LOSS OF SYNC.

TRIGGERING

Substitute V12. Dress all filament leads away from grid circuit of vertical oscillator.

VIDEO

SOUND BARS

Check adjustment A10 (4.5MC Trap). Check adjustment of local oscillator and video IF

POOR RESOLUTION

Check by substitution, V1, V2, V3, V4 and V5. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check C2B, C44 and C47. Substitute V3, V4 and V5.

SMEAR

Substitute V6. Check associated components, particularly the peaking coils.

ONE BLACK BAR ACROSS PICTURE WITH PULLING EFFECT

Check tuner, video IF and video amplifier tubes for filament to cathode leakage.

DIM PICTURE

Check picture tube. (Refer to DIM PICTURE, POWER section).

AUDIO

WEAK OR NO SOUND

Check by substitution, V7, V8, V9 and V10. Check ratio detector adjustment. Check 4.5MC amplifier stage components. Check video IF alignment.

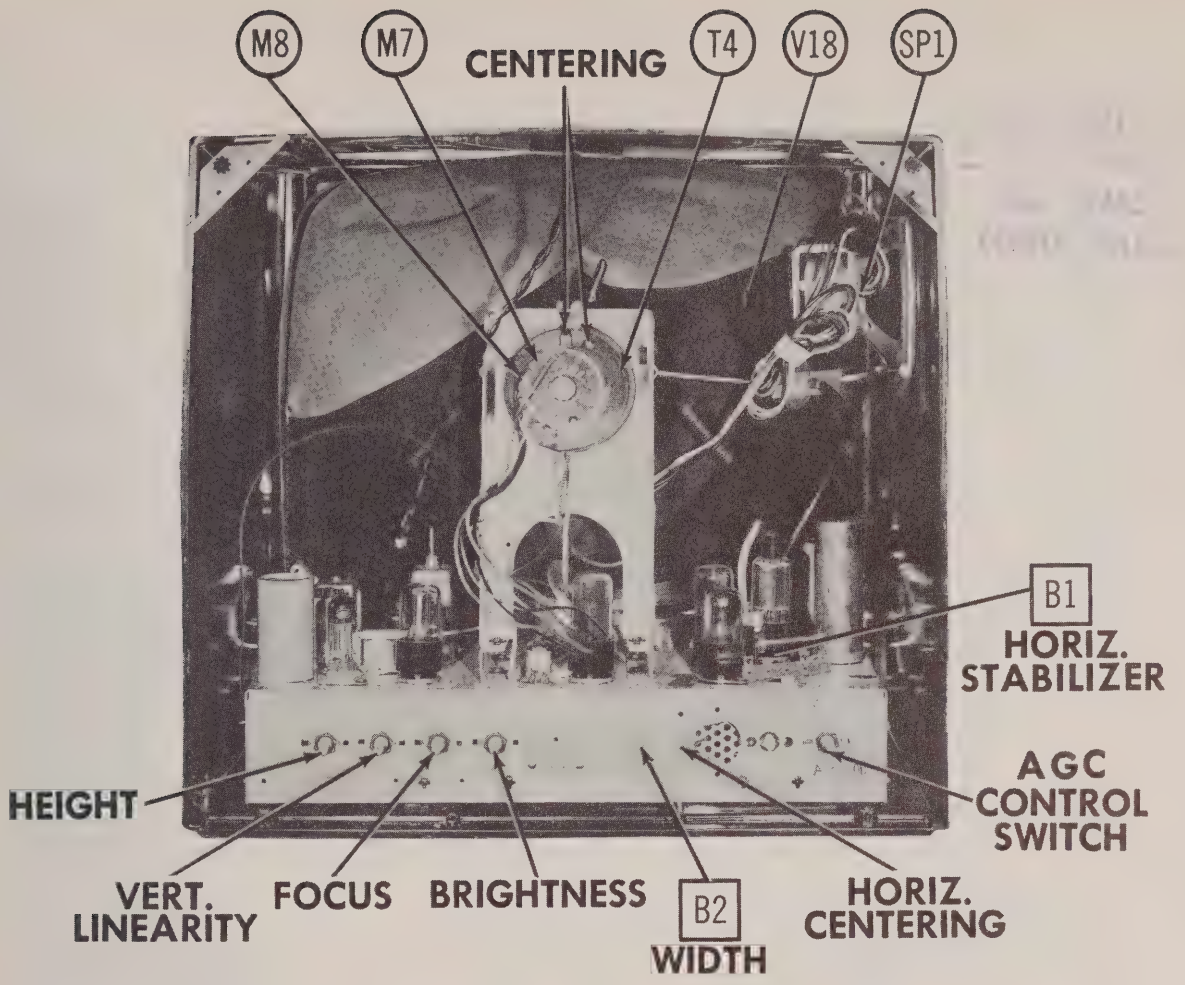
BUZZ

Substitute V8. Check adjustment of ratio detector secondary.

DISTORTED

Substitute V9 and V10. Check speaker. Check V9 and V10, using signal generator and scope;

If Undistorted	If Distorted
Check ratio detector and 4.5MC amplifier components.	Check components of stage where distortion is noticed.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (B1) until the picture is in sync.

Check the sync range of the horizontal hold control for proper centering by turning the control first to one extreme then the other, of its rotation and switching off channel and back. Turn the horizontal hold control slowly toward the center and note the pull in point of synchronization. The pull in points from both extremes of rotation should be equal distances on each side of the mid-position. If necessary retouch B1 for this condition.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

COMPARISON OF 1200D SERIES CHASSIS

The AG1200D may be considered the basic chassis in this series. All other chassis listed are based on the AG1200D chassis with any one or more of the modifications shown on the following pages. See chart below for modifications used in any particular chassis.

CHASSIS	PIX TUBE SIZE	HEATER CIRCUIT See Modification IV	TUNER TYPE See Modification VI	MODIFICATION USED
AG1200D				
Run 1	20" glass	Series-Parallel	1E1492 Pentode	None
Run 1A	20" glass	Series-Parallel	1E1492 Pentode	I
Run 2	20" glass	Series -Parallel	1E1492 Pentode	I, II
AH1200D	20" glass	Series-Parallel	1E1492 Pentode	I, III
AJ1200D				
Run 1	21" metal	Transformer	1C1376 Cascode	I, IV, VI, VII, VIII
Run 1A	21" metal	Transformer	1C1376 Cascode	I, II, IV, VI, VII, VIII
Run 2	21" glass	Transformer	1C1376 Cascode	I, II, IV, VI, VII
AL1200D				
Run 1	17" glass	Series-Parallel	1C1345 Pentode	I, V, VII
Run 1A	17" glass	Series-Parallel	1C1345 Pentode	I, II, V, VII
Run 2	17" glass	Transformer	1E1677 Cascode	I, II, IV, VI, VII
AR1200D				
Run 1	21" glass	Series-Parallel	1E1492 Cascode	I
Run 1A	21" glass	Series-Parallel	1E1492 Cascode	I, II
AY1200D				
Runs 1, 2	21" glass	Transformer	1E1677 Cascode	I, II, IV, VI

MODIFICATION I

To improve vertical and horizontal sync particularly under extreme fringe area receiving conditions, the following changes are made.

A. 10,000 ohms, $\frac{1}{2}$ watt resistor R49 replaced by 22,000 ohms, $\frac{1}{2}$ watt resistor
B. 470,000 ohms, $\frac{1}{2}$ watt resistor R50 replaced by 220,000 ohms, $\frac{1}{2}$ watt resistor
C. 47,000 ohms, $\frac{1}{2}$ watt resistor R60 replaced by 33,000 ohms, $\frac{1}{2}$ watt resistor
D. 22MMF, 500V., ceramic tubular capacitor C61 replaced by 47MMF 500V. ceramic tubular capacitor.
E. 1000MMF 500V. ceramic disc capacitor added between pin 5 of the 12AX4 damper tube, V16 and ground.

MODIFICATION II

LOCATION OF CHANGE	CHANGE MADE
Video amplifier circuit	Coil L25 and a 3.3KΩ resistor are replaced by a jumper wire.

MODIFICATION III

Provision for phono input included by means of the following changes:

LOCATION OF CHANGE	CHANGE MADE
A. Rear Chassis apron	Phono Socket and Phono Switch are added.
B. Phono input circuit	Resistor, 220 ohms, $\frac{1}{2}$ watt, Capacitor, .05MFD, 600V. and Capacitor, .01MFD are added.
C. Brightness Control Circuit	The Brightness Control is returned to ground through the Phono Switch instead of being grounded directly.
D. Volume Control Circuit	The volume control is coupled through the Phono Switch instead of being connected to the ratio detector.

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Hallicrafters Part No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	90X68C5	6BC5	7BD	
V2	Converter	90X676	6J6	7BF	
V3	1st. Video IF Amp.	90X6C96	6CB6	7CM	
V4	2nd. Video IF Amp.	90X6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	90X6CB6	6CB6	7CM	
V6	Video Output	90X6AH6	6AH6	7JK	
V7	Sound IF Amp.	90X6AU6	6AU6	7BK	
V8	Ratio Detector	90X6AL5	6AL5	6BT	
V9	AF Amplifier	90X6C4	6C4	6BG	
V10	Audio Output	90X25L6GT	25L6GT	7S	
V11	Sync Separator-Sync Phase Inv.	90X12SN7GT	12SN7GT	9A	
V12	Vert. Oscillator-Vert. Output	90X12BH7	12BH7	9A	
V13	Horiz. AFC	90X6AL5	6AL5	6BT	
V14	Horiz. Mult.	90X6SN7GT	6SN7GT	6BD	
V15	Horiz. Output	90X25B6GT	25B6GT	7AM	
V16	Damper	90X12AX4GT	12AX4GT	6CG	
V17	HV Rectifier	90X1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Hallicrafters Part No.	REPLACEMENT DATA: SYLVANIA Part No.	RTMA BASE TYPE	NOTES
V18A	21XP4	21XP4	12C	
B	20HP4	20HP4	12C	
C	21MP4	21MP4	12C	
D	21FP4	21FP4	12C	
	17HP4	17HP4	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C1	200	150	45B217	AFHS1-71		XB008		FP216.1	TVL-1431	
C2A	▲100	300								
B	●10	300	45C209	AFHS4-135		D109		FP419.4	TVL-4561	
C	▲200	150								
D	30	150								
C3A	▲200	150	45C210	AFHS2-109		BR415		FP216.1	TVL-2444	
B	▲5	150				XB006				
C4	10	150	45A097	PRS150/12		BR1015		TC42	TVA-1406	
C5	5	50	45B175	PRS150/4		BR550		TC30	TVA-1303	
C6	10	50	45B211	PRS50/10		BR105		TC32	TVA-1304	
C7	20	450	45B208	PRS450/20		BR2045A		TC75	TVA-1709	
C8	330		47B20331M5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C9	330		47B20331M5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C10	15						N330K-150			
C11	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C12	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C13	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C14	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C15	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C16	.7				TCZ-.68		NP0K-R7			
C17	.6						NP0K-R6			
C18	1.8						NP0K-1R8			
C19	.27						NP0K-R27			
C20	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C21	12						NP0K-120			
C22	4						N330K-040			
C23	470									
C24	15						N330K-150			
C25	5000			BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C26	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C27	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C28	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C29	5000			BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C30	.6						NP0K-R6			
C31	330		47B30331M5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C32	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C33	.05	200	46AU503J	P258-05	DF-503	PJ255		PT415	2TM-S5	
C34	1000		47A230	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35A	4000		47A218	BPD-2X004	DD-2-502	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000									
C36	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C37	1000		47A230	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C38	1000		47A230	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C40	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C41	10		47B201005K5	SI5NP0			N330K-100			
C42	5		47A260-6	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCP-V47	
C43	.5	25	46A177	P288-5		PJ25P5		PT405	2TM-P5	
C44	.1	200	46AU104J	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C45	30		47X25PG300K				N150K-300			
C46	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C47	.1	400	46AV104J	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C48	2.2		47A180-4	SI2.2NP0	TCZ-2.2		NP0K-2R2		5TCCB-V22	
C49	47			SI47NP0	TCZ-47		NP0L-470	ZT-545	5TCC-Q47	
C50A	4000		47A218	BPD-2X004	DD-2-502	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000									
C51	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C52	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C53	330		47B20331M5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C54	1000		47A230	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C55	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C56	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C57	.01	▲▲▲	46AW103J	P488-01	DF-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C58	.02	600	46AY203J	P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C59	220		47B2022IK5	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C60	.005	600	46AY502J	P588-005	DS-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C61	51				TCN-51		N750K-510			
C62	.05	400	46AW503J	P488-05	DF-503	PTE4S5		PT415	4TM-S5	

PARTS LIST AND DESCRIPTIONS (CONT.)

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C63	.0047	400	46B3472L4	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C64	.0047	400	46B3472L4	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C65	.01	400	46B3103L4	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C66	.047	400	46B3473L4	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C67	.047	400	46B3473L4	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C68	.0047	400	46B3472L4	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C69	5000		47A168	BPD-005	MD-502	TM5D5	81J-005	DC-525	5HK-D5	
C70	1000		47B20A102M5	SI1000	D6-102	TM5D1	GP2L-103	UC-521	5HK-D1	
C71	1000		47B20A102M5	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C72	.005	600	46A260ZF	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C73	.1000	600	46BS102L10	P1000-001		PTE1D1		PT1621	MB-D1	
C74	.003	400	46AW302J	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C75	.01	400	46AW103J	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C76	2000	500	47X30D392K	P169-0004		IDE524		MCB4463	MB-34	
C77	390	500	47X20D391K	P169-0004		5RS74		MCB243	MB-34	
C78	.1	600	46AY104J	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C79	390	500	47X20D391K	P169-0004		5RS74		MCB243	MB-34	
C80	560	500	47X30D561K							
C81	.047	400	46BS473L4	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C82	1000		47A230	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C83	120	3000	47A296						30GA-T12	
C84	500	20000	47A223	HV20C	TV3-502	MM-C20TG	413-501	HV-20025	20DK-T5	
C85	47	2000		HYD30-000047				MCL447	30GA-Q47	
C86	.05	600	46AY503J	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C87	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafters Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	2500Ω	½	25B997	QJ-345*	RTV-234	SBB-723-S	UF252L	Contrast-Panel
B	1 Meg						UR16A	Volume-Rear
C	Switch						UA-36	Attach to R1B
R2A	120KΩ with 50KΩ stop.	½	25B1014	Q11-125	AG-49-S	B-35	U-61	Horiz. Hold-Note 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	850KΩ with 350KΩ stop	½	25B1013	Q11-133	AG-58-S	B-59	U-50	Vert. Hold-Note 2
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	5 Meg with 100KΩ stop	½	25B1000	Q17-141	AG-85-S		U-85	Brightness-Note 3
B	Shaft		Not Req.	Not Req.	KS8-3		Not Req.	Attach to R4A
R5A	1.5Meg	½	25B1003	Q11-138	AG-83-S	AB-75	U-155	Focus
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R5A
R6A	750Ω	½	25B990	Q11-105	AG-8-S	AB-5	U-4	Vert. Linearity
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R6A
R7A	5 Meg with 1 Meg stop	½	25B998	Q11-141	AG-85-S	AB-87	U-85	Height-Note 4
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R7A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-111 & P1-109 (Panel)

B13-137 & R2-124 (Rear) & SWITCH 76-1.

Note 1. Connect a 47KΩ resistor in series with right hand terminal of the control & the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down).

Note 2. Connect a 330KΩ resistor in series with right hand terminal of the control & the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down).

Note 3. Connect a 100KΩ resistor in series with right hand terminal of the control & the lead connecting to the sa me terminal of the original control. (Control viewed from shaft end, terminals down).

Note 4. Connect a 1 Meg resistor in series with right hand terminal of the control & the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters Part No.	IRC Part No.	NOTES
R8	470KΩ	1		BTS-470K	
R9	470KΩ	1		BTS-470K	
R10	22000	1		BTS-2200	
R11	15KΩ	1			
R12	2200Ω	1		BTS-2200	
R13	470Ω	1		BTS-470	
R14	220KΩ	1		BTS-220K	
R15	3300Ω	1		BTS-3300	
R16	15KΩ	1			
R17	10KΩ	1			
R18	100KΩ	1	23X20X104S	BTS-100K	
R19	2200Ω	1	23X20X222S	BTS-2200	
R20	100Ω	1	23X20X102S	BTS-1000	
R21	4700Ω	1	23X20X472S	BTS-4700	
R22	47Ω	1	23X20X470S	BTS-47	
R23	100Ω	1	23X20X102S	BTS-1000	
R24	10KΩ	1	23X20X103S		
R25	10000Ω	1	23X20X103S	BTS-10K	
R26	47Ω	1	23X20X470S	BTS-47	
R27	1000Ω	1	23X20X102S	BTS-1000	
R28	82000Ω	1	23X20X823S	BTS-8200	
R29	150Ω	1	23X20X151K	BTS-150	
R30	10000Ω	1	23X20X103S	BTS-10000	
R31	1.5Meg	1	23X30X155K	BTS-1.5Meg	
R32	390KΩ	1	23X20X394K	BTS-390K	
R33	22KΩ	1	23X30X223K	BTA-22K	
R34	56000Ω	1	23X20X563K	BTS-5600	
R35	1.5Meg	1	23X20X155K	BTS-1.5Meg	
R36	2.2Meg	½	23X20X225K	BTS-2.2Meg	
R37	1.5Meg	½	23X30X155K	BTA-1.5Meg	
R38	33KΩ	1	23X30X333K	BTA-33K	
R39	4700Ω	2	23X40X472K	BTB-4700	
R40	150Ω	½	23X20X151K	BTS-150	
R41	2200Ω	1	23X30X222K	BTA-2200	
R42	270 Ω	½	23X20X27IK	BTS-270	
R43	33KΩ	1	23X20X333K	BTS-33K	
R44	10KΩ-5%	½	23X20X103J	BTS-10K-5%	
R45	10KΩ-5%	½	23X20X103J	BTS-10K-5%	
R46	12000	1	23X20X123K	BTS-1200	
R47	33KΩ	1	23X20X333S	BTS-33K	
R48	470KΩ	3	23X20X474S	BTS-470K	
R49	22KΩ	1	23X20X223S	BTS-22K	
R50	220KΩ	1	23X20X224S	BTS-220K	
R51	2.2Meg	1	23X20X225S	BTS-2.2Meg	
R52	1.2Meg	1	23X20X125K	BTS-1.2Meg	
R53	2200Ω	1	23X20X222S	BTS-2200	
R54	47KΩ	1	23X20X473S	BTS-47K	
R55	8200Ω	1	23X20X822S	BTS-8200	
R56	2200Ω	1	23X20X222S	BTS-2200	
R57	560KΩ	1	23X30X564K	BTA-560K	
R58	10KΩ	1	23X30X103K	BTA-10K	
R59	22KΩ	1	23X30X223K	BTA-22K	
R60	33KΩ	1	23X20X333S	BTS-33K	
R61	10KΩ	1	23X20X103S	BTS-10K	
R62	3300Ω	1	23X20X332S	BTS-3300	
R63	1800Ω	3	23X20X182K	BTS-1800	
R64	8700Ω	3	24A971	1 3/4A-8000	
R65	120Ω	½	23X20X121K	BTS-120	
R66	22KΩ	1	23X20X223S	BTS-22K	
R67	100KΩ	1	23X20X104K	BTS-100K	
R68	100KΩ	1	23X20X104K	BTS-100K	
R69	4.7Meg	1	23X20X475K	BTS-4.7Meg	
R70	4.7Meg	1	23X20X475K	BTS-4.7Meg	
R71	33KΩ	1	23X30X333K	BTA-33K	
R72	1500Ω	1	23X20X152K	BTS-1500	
R73	5600Ω-5%	½	23X20X562J	BTS-5600-5%	
R74	82KΩ	1	23X20X823S	BTS-82K	
R75	220KΩ	1	23X20X224K	BTS-220K	
R76	180KΩ	1	23X20X184K	BTS-180K	
R77	8200Ω	1	23X20X822K	BTS-8200	
R78	390KΩ	1	23X20X394K	BTS-390K	
R79	10KΩ	2	23X40X103K	BTB-10K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters Part No.	IRC Part No.	NOTES
R80	4700Ω	1	23X30X472K	BTA-4700	
R81	2.2Ω	½	23X20X022K		
R82	7.5Ω	5	25B1004		

* Special resistor-Measures 190Ω Cold, 19Ω Hot.

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters Part No.	IRC Part No.	NOTES
R83	*	*		25A1008	
R84	80Ω	10		24A955	1 3/4A-75
R85	42Ω	3		24A957	1 3/4A-40
R86	220KΩ	½		23X20X224K	BTS-220K

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Hallicrafters Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	RCA TYPE No.	NOTES
T1	50Ω	200Ω	55B190	A-8125		TBO-5	A-97X	208T2 ⑪	Vert. Osc. Trans.
T2	267Ωtap ⑥ 17Ω	18.5Ω tap ⑥ 25Ω Sec. ② 0.	55D197 ① 55D193 ②						Horiz. Output Trans.
T3	737Ωtap ④ 1Ω		55C192	A-8140 ④ ⑤	A-3081 ④ ⑤	TBO-6 ④ ⑤	A-103X ⑪		Vert. Output Trans.
T4A	40Ω		53A268	DY-10A ③	MDF-30 ③ ⑧	TY-4 ⑤ ⑧	Y-20 ⑪ ⑧		Horiz. Deflection Coils
B	4Ω		53A271 ③ 53C263 ⑦						Vert. Deflection Coils

① Includes horizontal centering control.
② Used on 17" chassis.
③ Drill new mounting holes.
④ Drill one new mounting hole.
⑤ Connect as auto trans.
⑥ Alternate yoke
⑦ Used on 17" chassis.
⑧ Connect terminal 1 to terminal 8.
⑨ Use original deflection coil network
⑩ Mount top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Hallicrafters Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	NOTES
T5	2.6KΩ	3.4Ω	220Ω	.46Ω	55B191 55C191 ①	A-3876	A-3928	RO-304	S-IX	① Alternate audio output

SPEAKER

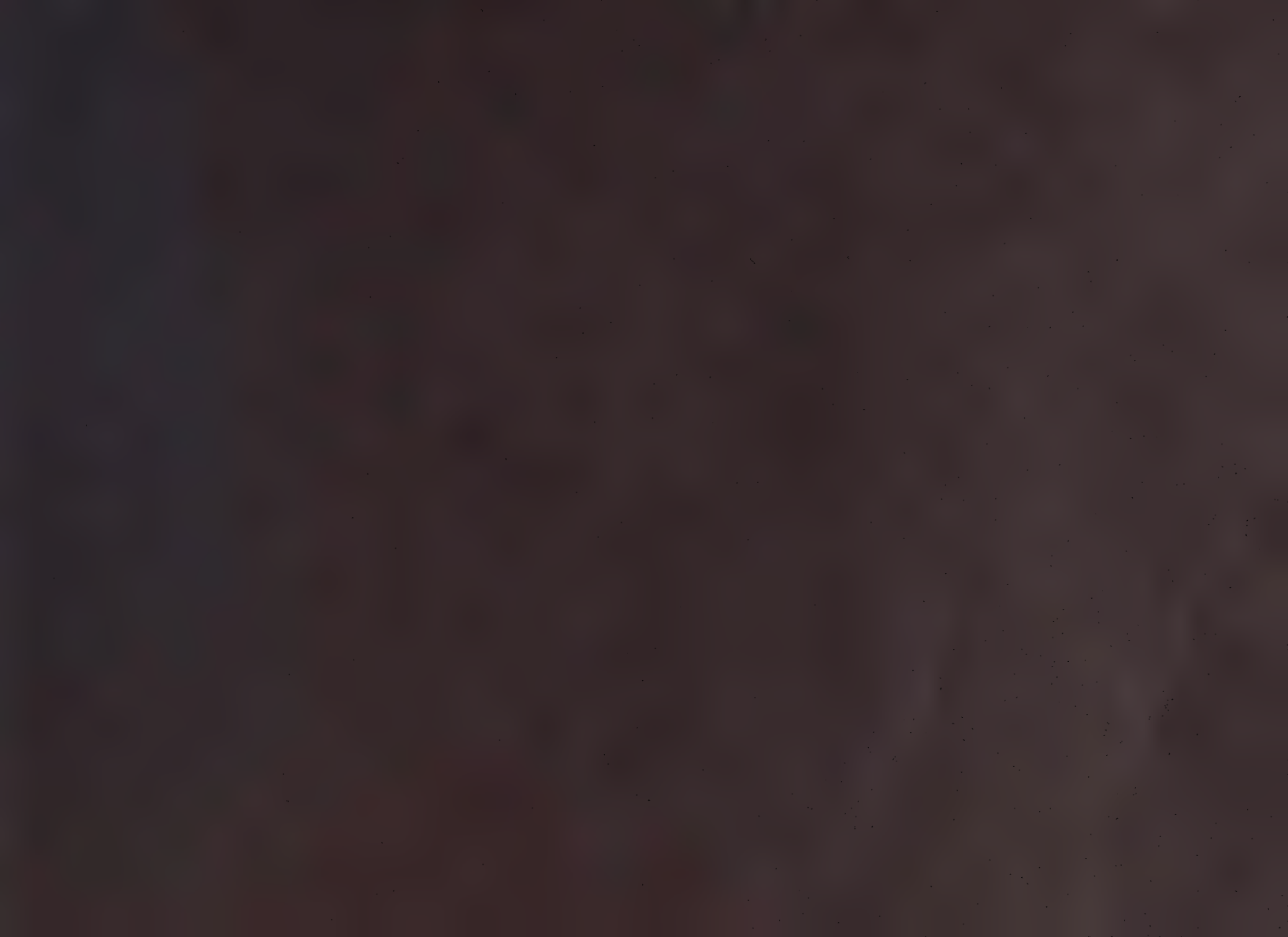
ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: Hallicrafter Part No.	JENSEN Part No.	QUAM Part No.	NOTES
SP1A	8"	65Ω	3.4Ω	85A135 ②	6K65S	6K65S	① Used in Models 1085, 1085A, 1088, 1088A, 1091 and 1091A
B	8"	6IΩ	3.4Ω	85A133 ①	8K61S		② 5Ω Rheostat used on some models.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Hallicrafters Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	NOTES
L1	Ant. Trans.	0Ω	0Ω					Low channel secondary-0Ω
L2	Ant. Coils	0Ω						
L3	Ant. Coil	0Ω						Channel 13
L4	Fil. Choke	0Ω						
L5	RF Coil	0Ω						Channel 13
L6	RF Coils	0Ω						
L7	Mixer Grid Coil	0Ω						Channel 13
L8	Mixer Grid Coils	0Ω						
L9	Fil. Choke	0Ω						
L10	Osc.Plate Coil	0Ω CT						Channel 13 Channel 6
L11	Osc.Coil	0Ω						
L12	Osc. Coils	0Ω						
L13	Conv.Plate	.2Ω						
L14	RF Choke	0Ω						
L15	1st. Video IF	.2Ω		51B1201	19-1020	TV-102 *	6171 *	
L16	2nd. Video IF	.2Ω	.2Ω	50B561			6140 †	
L17	3rd. Video IF	.2Ω	.3Ω	50B568				Includes Trap
L18	4th. Video IF	.4Ω	.4Ω	50B562			6140 †	
L19	Series Peaking Coil	3.2Ω		53B008		TV-180	4624	14 Microhenries
L20	Series Peaking Coil	6.3Ω		51A1578			4630	52 Microhenries
L21	Shunt Peaking Coil	8.7Ω		51A1579	19-3300		4586	340 Microhenries
L22	Series Peaking Coil	10Ω		51A1580	19-3500 ■	TV-188 ■	6174 ■	450 Microhenries, wound on 8.2KΩ resistor
L23	4.5MC Trap	2.4Ω		51B1541	20-1004	TV-151	1470	
L24	Shunt Peaking Coil	5.5Ω		51A1581	19-3160 ▲	TV-184 ▲	4644 ▲	145 Microhenries, wound on 6.8KΩ resistor
L25	Shunt Peaking Coil	14.5Ω		51A1582			4664 ▲	1.2 Microhenries, wound on 3.3KΩ resistor-Note 1
L26	Sound IF	1.1Ω		51B1542	17-3400	TV-151	1469	
L27	Fil. Choke	0Ω		53B294				1.24 Microhenries
L28	Ratio Det.	4Ω	.6OCT	50C473	17-1033	TV-110	1468	Tertiary Winding -.4Ω
L29	Horiz.Osc.	53Ω		51B1543	19-1576	TV-153	6110	
L30	Anti-ringing Coil	12Ω		53B264				Wound on .1MMF capacitor

Note 1. Chassis AG1200D Run2 and chassis AR1200D Run 1A replace 1.25 with wire jumper.
■ Parallel with 8.2KΩ resistor
▲ Parallel with 6.8KΩ resistor
▲ Parallel with 3.3KΩ resistor
* Enlarge mounting hole.
† Use adaptor plate

HALLICRAFTERS MODELS 1050, A (Ch. AL1200D), 1072, 4, 5, 8 (Ch. AG1200D), 1072A, 1074A, 1075A, 1078A (Ch. AR1200D, Run 1), 1074AT, 1075AT, 1078AT (Ch. AY1200D), 1077 (Ch. AH1200D), 1081, A, 1085, A, 1088, A (Ch. AJ1200D)



PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	Hallicrafters PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.160ADC	27A173	NF5	6Q4	1090A	6S300	300
M2	.160ADC	27A173	NF5	6Q4	1090A	6S300	300

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M3A	RF Tuner	1E1492	Models 1072, 1074, 1075, 1078 and 1078A
B	RF Tuner	1C1376	Models 1081, 1081A, 1085, 1085A, 1088 and 1088A
C	RF Tuner	1C1345	Models using chassis AL1200D (Runs 1 and 1A)
D	RF Tuner	1E1677	Models using chassis AY1200D and All200D, (Run 2).
M4A	Crystal Diode	19B1864	Video Detector (1N64)
B	Crystal Diode	19B1246	Video Detector (1N60)
M5	Switch	60B507	AGC Selector
M6	Switch	60B540	TV-Phono Selector, Model 1077
M7	Centering Magnet	21C158	
M8A	Ion Trap	21A146	All Models except 1050 and 1050A
B	Ion Trap	21A145	Models 1050 and 1050A
	Cabinet	78F1013	Model 1050
	Cabinet	78F1C13	Model 1050A
	Cabinet	116F028	Models 1072 and 1072A
	Cabinet	116F035	Models 1074, 1074A and 1074AT
	Cabinet	116A027	Models 1075, 1075A and 1075AT
	Cabinet	116F036	Models 1078, 1078A and 1078AT
	Cabinet	78F014	Models 1081 and 1081A
	Cabinet	78F1007	Models 1085 and 1085A
	Cabinet	78F1009	Models 1088 and 1088A
	Back Assembly	41A15494	Models 1050 and 1050A
	Back Assembly	41A15420	Model 1072
	Back Assembly	41A15464	Model 1072A
	Back Assembly	41A15446	Model 1074
	Back Assembly	41A15466	Model 1074A
	Back Assembly	41A15497	Model 1074AT
	Back Assembly	41A25008	Models 1075, 1078
	Back Assembly	41A15498	Models 1075A, 1075AT, 1078A, 1078AT
	Back Assembly	41A25000	Model 1081
	Back Assembly	41A25003	Model 1081A
	Back Assembly	41A25004	Models 1085, 1088
	Back Assembly	41A25005	Models 1085A, 1088A
	Safety Glass	22D292	Model 1050
	Safety Glass	22A292	Model 1050A
	Safety Glass	22A371	Models 1072, 1072A, 1074, 1074A, 1074AT, 1075, 1075A, 1075AT, 1078, 1078A, 1078AT
	Safety Glass	22D389	Models 1081, 1081A, 1085, 1085A
	Safety Glass	22D390	Models 1088, 1088A
	Mask	7E222	Models 1050, 1050A
	Mask	7B443	Model 1072
	Mask	7B450	Model 1072A
	Mask	7A444	Model 1074
	Mask	7A451	Models 1074A, 1074AT
	Mask	7E427	Model 1075
	Mask	7E446	Models 1075A, 1078A
	Mask	7E451	Model 1075AT
	Mask	7B427	Models 1078., 1078AT
	Mask	7A439	Models 1081, 1085, 1088
	Mask	7E441	Models 1081A, 1085A, 1088A
	Escutcheon (Picture tube)	7D315	Models 1050, 1050A
	Knob	15C579	Channel Selector
	Knob	15C492	Fine Tuning
	Knob	15C517	Contrast
	Knob	15C577	Off-On-Volume
	Knob	7D398	Horiz. Hold, Vert. Hold (2 used) Models 1050, 1050A, 1081, 1081A, 1085, 1085A, 1088
	Knob	7D428	Horiz. Hold, Vert. Hold (2 used) Models 1072, 1072A, 1074, 1074A, 1074AT, 1075, 1075A, 1075AT, 1078, 1078A, and 1078AT
	Knob	7A398	Horiz. Hold, Vert. Hold (2 used) Model 1088A

MODIFICATION IV

To replace series parallel heater arrangement with a heater transformer the following changes are made:

LOCATION OF CHANGE	CHANGE MADE
A. Between power line and Damper heater, pin 8	190 ohms cold/19 ohms hot, 5 watt, negative temperature coefficient resister R83 deleted.
B. Heater string shunt	80 ohms, 10 watt, 5% resistor R84 deleted.
C. Heater string shunt	42 ohms, 3 watt, 5% resistor R85 deleted.
D. Heater string choke	Air core RF choke L27 deleted.
E. 1st.IF Amp. heater by-pass	4000MMF dual disc ceramic capacitor C35 deleted.
F. Ratio Detector heater bypass	5000MMF disc ceramic capacitor C52 deleted.

LOCATION OF CHANGE	CHANGE MADE
G. Video Amp. heater bypass	5000MMF disc ceramic capacitor C46 deleted.
H. 4.5MC Amp. heater bypass	5000MMF disc ceramic capacitor C51 deleted.
I. Heater Transformer	Auto Transformer (52C258) added.
J. Sync Clipper (V11)	12SN7 tube replaced by 6SN7GT tube.
K. Horizontal Output (V15)	25BQ6GT replaced by 6BQ6GT tube.
L. Audio Output (V10)	25L6GT tube replaced by 6W6GT tube.
M. Audio Output tube socket wiring	Cathode pin 8 connected directly to heater pin 7 to place both heater and cathode at the same potential.

MODIFICATION V

Deflection Circuit changes are made as follows:

LOCATION OF CHANGE	CHANGE MADE
A. Plate (pin 2) circuit of Horizontal Oscillator	220,000 ohms, ½ watt resistor added.
B. Plate supply decoupling of Horiz. Oscillator tube (pin 2)	.1MFD, 600V. paper capacitor added.
C. Plate supply decoupling of Horiz. Oscillator tube (pin 2)	120,000 ohms, ½ resistor R76 replaced by 180,000 ohms, ½ watt resistor. One end of R76 is connected to plate pin 2 of V14B. The other end is connected to the 260V B+ supply (junction of L29, C3B, and R80.
D. Plate (pin 2) circuit of Horiz. Oscillator	4700 ohms, ½ watt resistor R77 replaced by 8200 ohms, ½ watt resistor.
E. Plate (pin 2) circuit of Horiz. Oscillator	470MMF silver mica capacitor C79 replaced by 390MMF silver mica capacitor.
F. Horiz. Output stage grid coupling	5000MMF disc ceramic capacitor C80 replaced by 560MMF silver mica capacitor.
G. Horiz. Output Stage grid leak	330,000 ohms, ½ watt resistor R81 replaced by 390,000 ohms, ½ watt resistor.

LOCATION OF CHANGE	CHANGE MADE
H. Horiz. Output stage screen bypass	.047MFD, 400V paper capacitor added.
I. Horiz. Output stage screen bypass	10,000 ohms, 2 watt resistor added.
J. Horiz. Output stage output trans.	Horiz. output trans. T2 (55D193) replaced by trans. (55D197).
K. Serve Loop feedback from Horiz. Output to AGC tube	Two 150,000 ohms, 1 watt resistors series connected replaced by 33,000 ohms, 1 watt resistor R71.
L. Series Cap. in doubler power supply	140MFD, 150V electrolytic capacitor C1 replaced by 200MFD, 150V electrolytic capacitor.
M. Audio Voltage Amp. cathode resistor	1500 ohms, ½ watt resistor R46 replaced by 1200 ohms, ½ watt resistor.
N. Speaker	Speaker with field coil resistance of 85 ohms by speaker with field coil resistance of 16 ohms.

MODIFICATION VI

To use a 1C1376 or 1E1677 Cascode tuner in place of the 1C1345 or 1E1492 Pentode tuner the following changes are made:

A. The 1C1345 or the 1E1492 tuner is removed and replaced by either the 1C1376 or 1E1677 Cascode tuner. These tuners do not have the same terminal connections. The cascode tuners may be used only with chassis which have a heater transformer.

B. A wire to supply 260volts DC is added between tuner terminal 4 of the Cascode tuner and the junction of R38 (33,000 ohms, 1 watt, video amplifier screen resistor) and the 260 volt "B" supply.

MODIFICATION VII

A. A deeper chassis with a depth of 3-3/4" instead of 3" is used.

B. The deeper chassis is provided with a removable front chassis cover plate.

MODIFICATION VIII

A. Whenever the picture tube has a metal cone which elliminates the high voltage filter capacitor built into tubes with an outer aquadag coating, C84 (500MMF, 20,000 volts) is required between pin 7 and ground of the 1B3GT high voltage rectifier.

B. On some chassis using a metal cone picture tube a 1 Meg, 1 watt resistor is added in series with the high voltage anode lead.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of RF Tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See Disassembly Instructions).

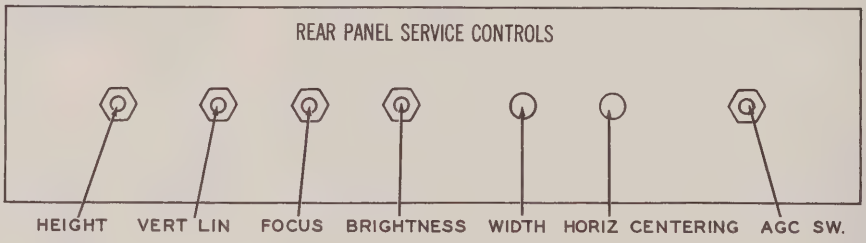
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See Disassembly Instructions).

PICTURE TUBE REMOVAL

For picture tube removal is is necessary to remove chassis. (See Disassembly Instructions).

SERVICE ADJUSTMENTS LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz Oscillator, it is necessary to remove the rear cover and supply power to set . Adjustment is located on top of chassis. Set the Horiz. Hold Control at the center of its range and adjust the Horiz. Freq. slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Radio Detector Secondary L28 located on top of chassis. (See Tube Placement Chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 3 screws and 1 knob (fringe area). Remove rear cover.
3. Disconnect speaker. Remove 4 speaker nuts. Remove speaker.
4. Remove 4 chassis bolts. (located in cabinet feet). Remove chassis.

TROUBLE SHOOTING AIDS (CONT.)

POWER

SET DEAD

Check for tube with open filament. Check selenium rectifiers. Check R82 for open. If it is open check C1 for short.

SMALL RASTER

Check selenium rectifiers. Check B+ filter and voltage doubler.

DIM PICTURE

Follow procedure outlined under SMALL RASTER and check picture tube for low emission.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution, V14, V15, V16 and V17. Check waveform W13;

If Unsatisfactory	If Satisfactory
Check all components of V14. Check coupling capacitor C80.	Check components of horizontal output stage indluding T2 and T4A. Check damper circuit and hi-voltage filter capacitors C84.

WEAK HIGH VOLTAGE

Check by substitution , V14, V15, V16 and V17. Measure B+.

If Low	If Sufficient
Follow procedure outlined under SMALL RASTER.	Follow procedure outlined under LOSS OF HIGH VOLTAGE.

GENERAL

RASTER BUT NO PICTURE OR SOUND

Check by substitution, V2, V5, V6 and V6. Check associated components.

VERY SNOWY PICTURE

Substitute V1 and check components.

FAINT PICTURE

Check video IF tubes and components.

INTERMITTENT STREAKS

Check high voltage circuit for corona discharge and arcing.

Symptoms showen above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

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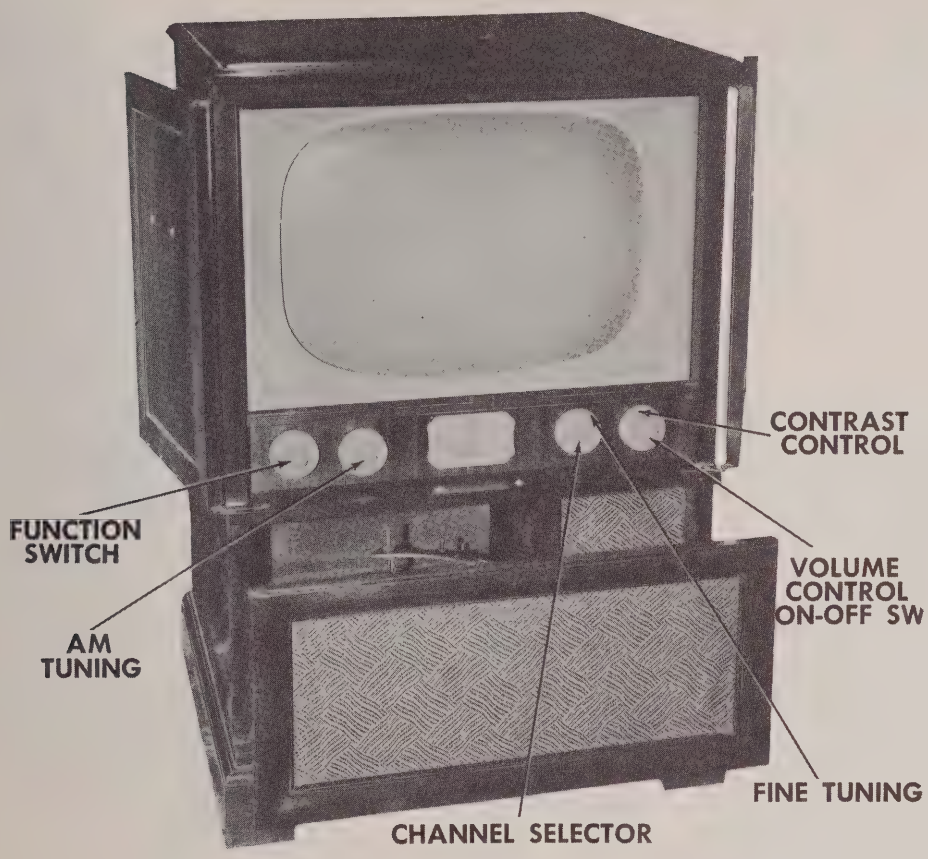

HOFFMAN MODELS
21M903, 21B904, 21P905 (Ch. 213 or 213M)

HOFFMAN MODEL 21M903

TRADE NAME	Hoffman Models 21M903, 21M904, 21M905 (Ch. 213 or 213M)
MANUFACTURER	Hoffman Radio Corp.,6200 S. Avalon Blvd., Los Angeles 3, Calif.
TYPE SET	TV-Radio-Phono Combination
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.26 Amp. @ 117 Volts AC
TUNING RANGE-	TV Channels 2 thru 13, Video IF 26.25MC, Sound IF 21.75MC (Intercarrier), AM Radio 540-1620 KC, AM IF 455KC

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 13 thru 16
Photographs
Cabinet-Rear View 11
Capacitor Identification 4, 9
Chassis-Top View 3
RF Tuner 10
Resistor Identification 19, 20
Photographs (Cont)
Trans., Inductor and Alignment Identification 16
Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

WEBSTER-CHICAGO RECORD CHANGER MODEL 114

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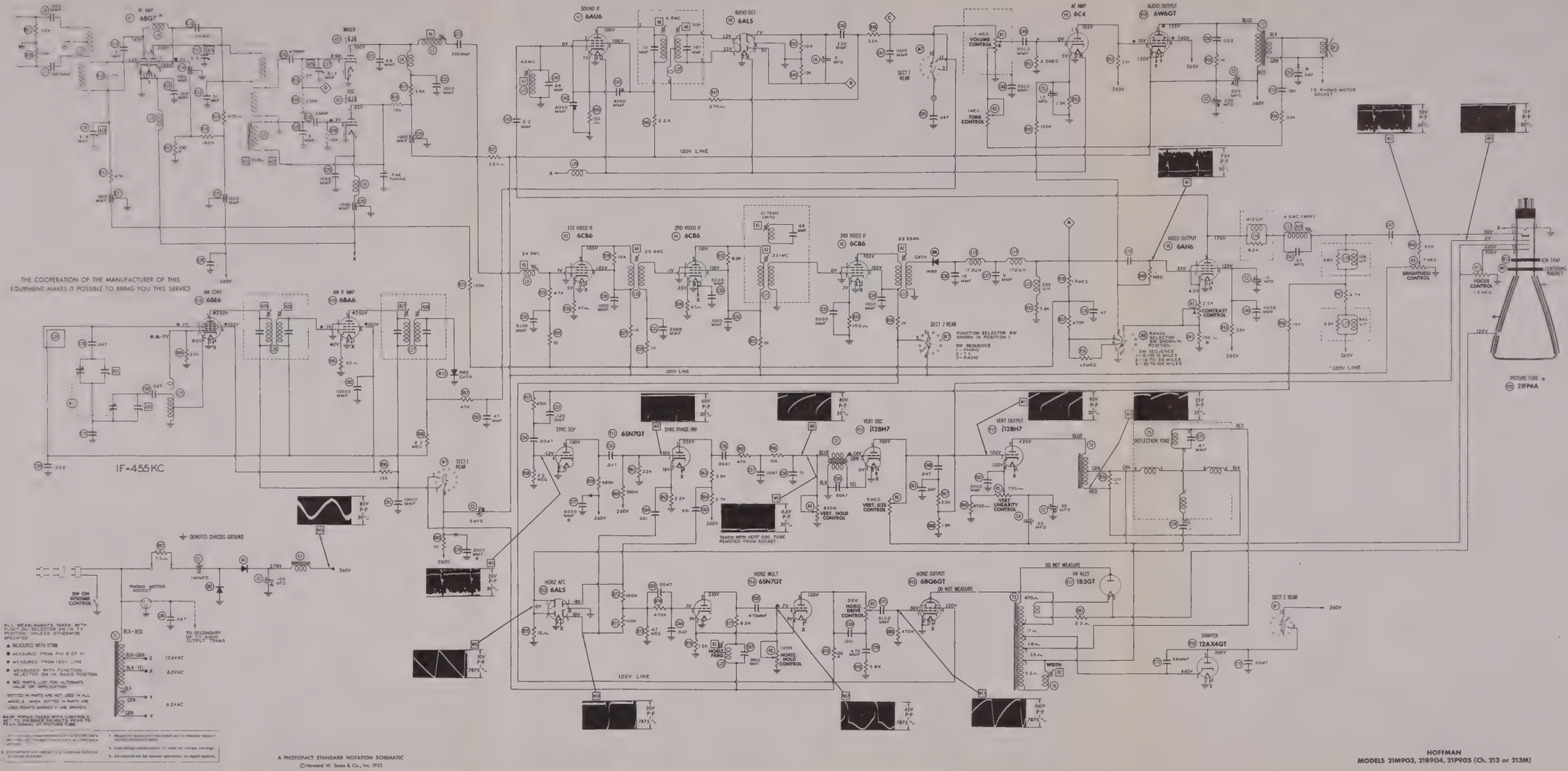
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
IF=455KC
DENOTES CHASSIS GROUND
ALL MEASUREMENTS TAKEN WITH FUNCTION SELECTOR SW IN TV POSITION UNLESS OTHERWISE SPECIFIED
▲ MEASURED WITH VTVM
■ MEASURED FROM PIN 8 OF V1
● MEASURED FROM 120V LINE
◆ MEASURED WITH FUNCTION SELECTOR SW IN RADIO POSITION
⊗ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE LINED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 35 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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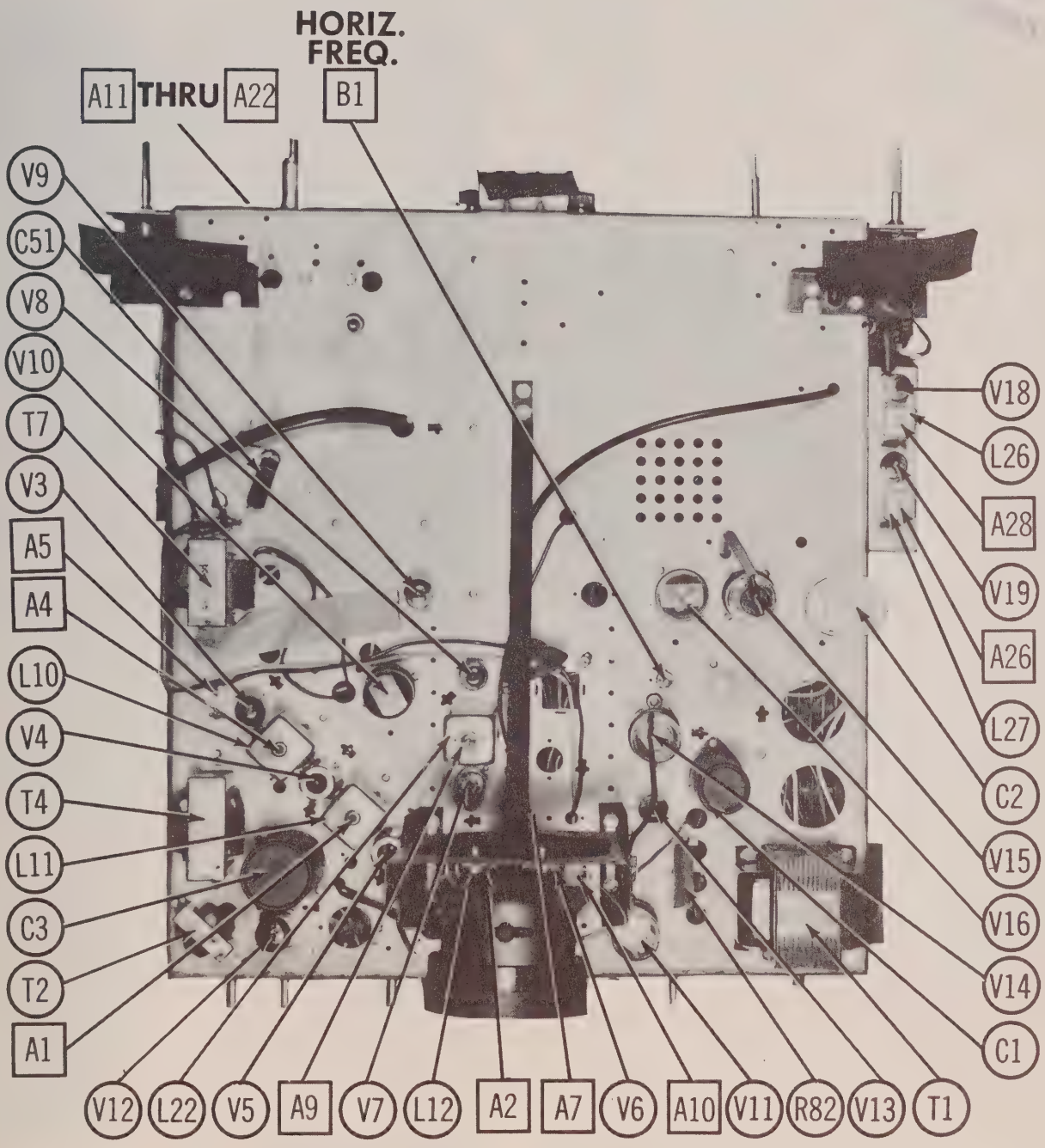
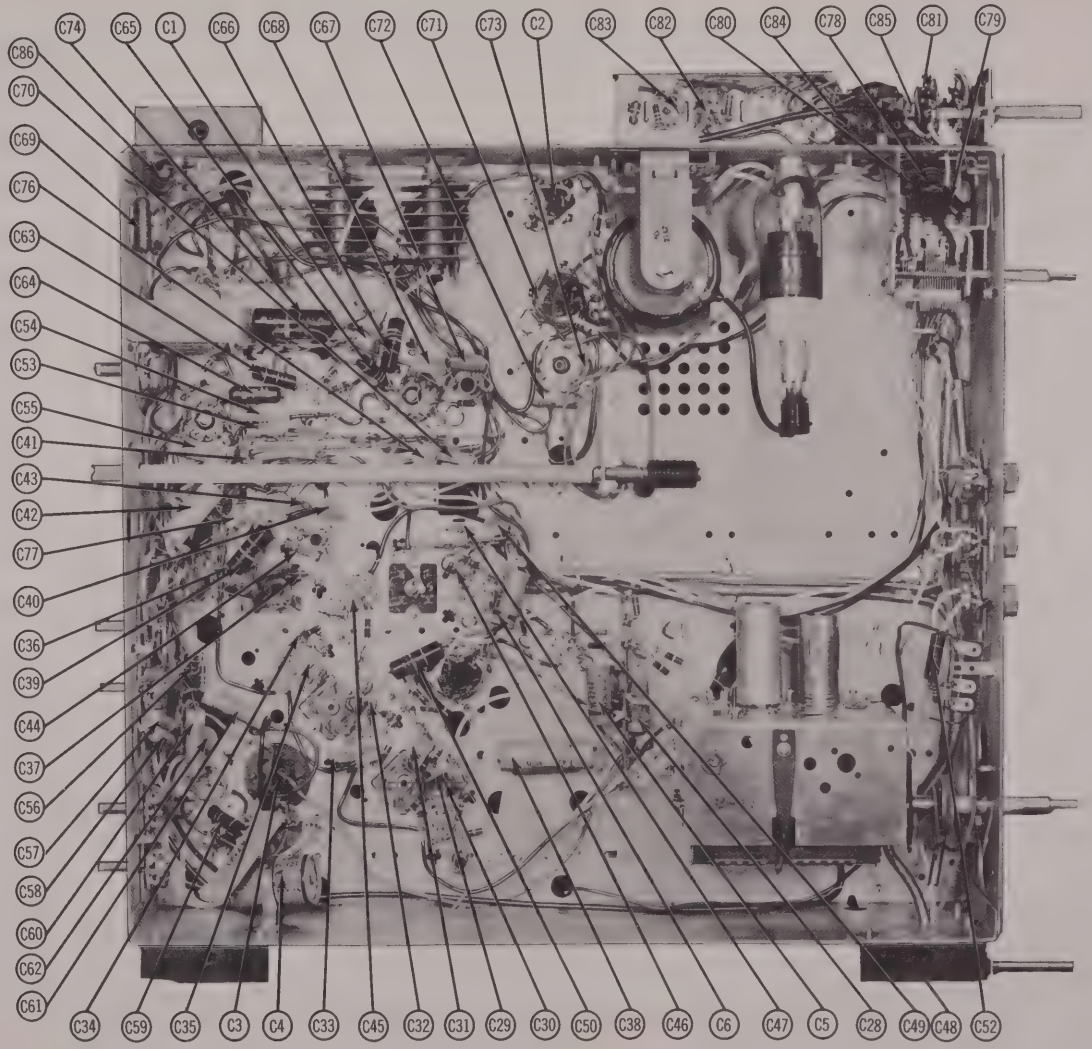
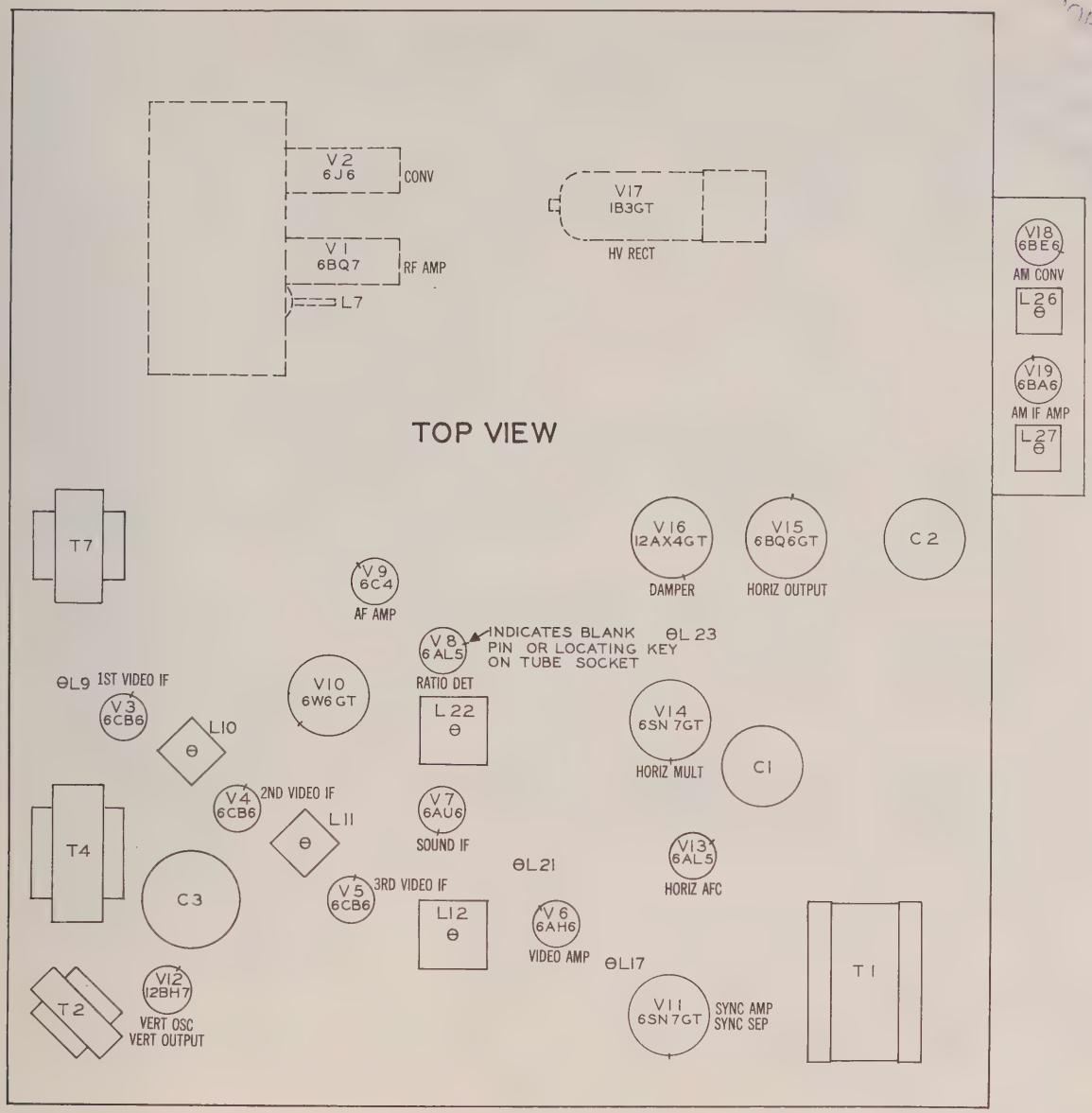


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - Sel. Rect. (M1 & M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V20
Has pic, no sound - V7, V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12
No horiz. sync - V11, V13, V14
No vert. or horiz. sync - V11

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V20
No vertical deflection - V12
Poor vert. linearity or foldover - V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, M1, M2
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V13, V14

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C38.
Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.75MC (Unmod)	Any	DC probe to point ◇A◇ Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	25.25MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	23.1MC	"	"	A3	"
4.	"	"	25.4MC	"	"	A4	"
5.	"	"	24.5MC	"	"	A5, A6	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.75MC 23.25MC 25.25MC 26.25MC	Any	Vert. amp to point ◇A◇ Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A2 thru A6 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to point ◇A◇ Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B◇ Common to chassis.	A7, A8	Adjust for maximum deflection. Attenuate generator to maintain 4 to 6 volts for VTVM.
8.	"	"	"	"	DC probe to point ◇C◇ Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to point ◇A◇ Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point ◇B◇ Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
8.	"	"	"	"	"	Vert. amp to point ◇C◇ Low side to chassis.	A9	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Turn the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to point ◇A◇ Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 4) to pin 11 (cathode) of picture tube Common to chassis.	A10	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the bias battery as under Video IF Alignment.
The channel oscillator adjustment screws are reached through a hole just above the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point ◇A◇. Low side to chassis.	A11	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point (D) Low side to chassis.	A23, A24, A25	Adjust for response curve similar to Fig. 6.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make slight compromise adjustment of A23, A24 and A25 with channel switch set to that channel then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10 MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

PROPERTY OF RADIO SHIP SERVICE DEPT. BOSTON

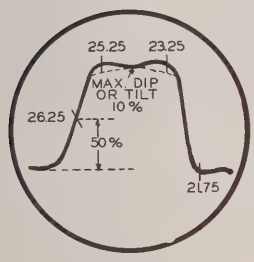


FIG. 1

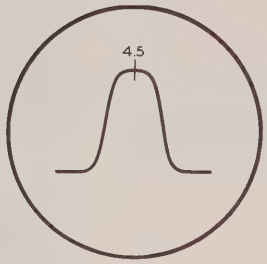


FIG. 2

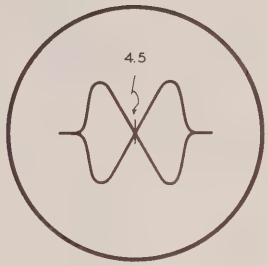


FIG. 3

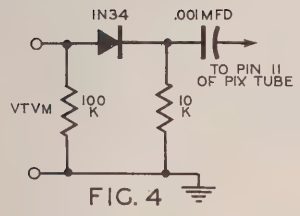


FIG. 4

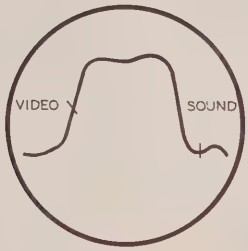


FIG. 5

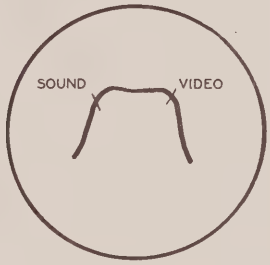


FIG. 6

RADIO ALIGNMENT INSTRUCTIONS

RADIO ALIGNMENT

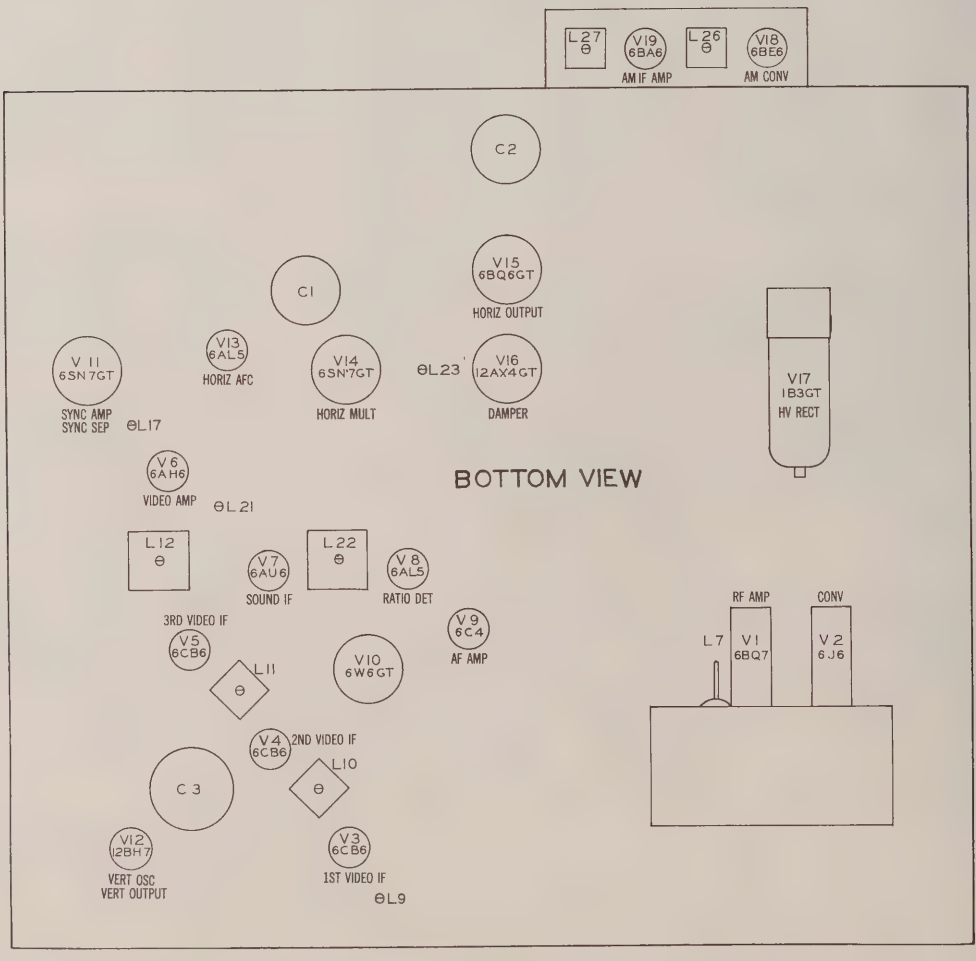
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.1MFD	High side to pin 1 (grid) of 6BE6 (V18). Low side to chassis.	455KC (400~Mod.)	Radio	Tuning gang fully open	Across voice coil	A26, A27 A28, A29	Adjust for maximum output.
14.		Loop	1620KC	"	"	"	A30	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
15.		"	1400KC	"	Tune to 1400KC signal	"	A31	"
16.		"	600KC	"	Tune to 600KC signal	"		Check tracking at 600KC. If necessary bend outer rotor plates of antenna tuning capacitor for best tracking

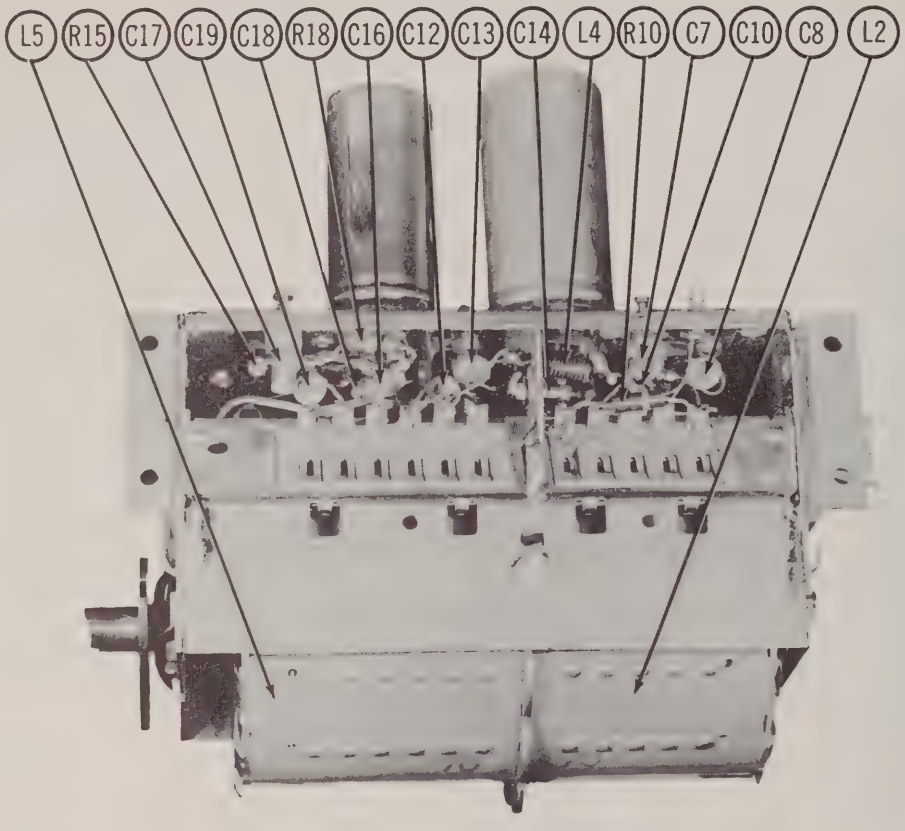
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	1.6Meg	0Ω	.1Ω	0Ω	†530Ω	†130KΩ	INF	0Ω
V 2	6J6	ǂ15.2KΩ	ǂ4.1KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	1.5Meg	47Ω	0Ω	.1Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 4	6CB6	1.5Meg	47 Ω	.1Ω	0Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	.1Ω	0Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 6	6AH6	1.1Meg	210Ω	0Ω	.1Ω	†4.7KΩ	†33KΩ	210Ω		
V 7	6AU6	1.2Ω	150Ω	.1Ω	0Ω	ǂ2.2KΩ	ǂ2.2KΩ	150Ω		
V 8	6AL5	10KΩ	10KΩ	.1Ω	0Ω	1 Meg	0Ω	1 Meg		
V 9	6C4	†33KΩ	INF	0Ω	.1Ω	†33KΩ	2.2Meg	1.5KΩ		
V 10	6W6GT	INF	ǂ0Ω	†330Ω	†62Ω	†33KΩ	INF	ǂ.1Ω	170KΩ	
V 11	6SN7GT	22KΩ	†6.6KΩ	2.2KΩ	2.2Meg	†680KΩ	0Ω	0Ω	.1Ω	
V 12	12BH7	▰2.5Meg	500KΩ	320Ω	.1Ω	.1Ω	▰785Ω	▰2.5Meg	9KΩ	0Ω
V 13	6AL5	15Ω	15Ω	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5.1Meg	†9.3KΩ	1.5KΩ	75KΩ	†120KΩ	1.5KΩ	0Ω	.1Ω	
V 15	6BQ6GT	INF	.1Ω	INF	ǂ0Ω	470KΩ	†145KΩ	0Ω	0Ω	Top Cap 17Ω
V 16	12AX4GT	INF	▰1.8Ω	600KΩ	INF	†62Ω	INF	0Ω	.2Ω	
V 17	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap 487Ω
♦ V 18	6BE6	22KΩ	.1Ω	0Ω	.1Ω	†1.1KΩ	†16KΩ	3.2Meg		
♦ V 19	6BA6	3.2Meg	0Ω	.1Ω	0Ω	†1.1KΩ	†16KΩ	160Ω		
V 20	21FP4A	0Ω	1.8KΩ	Pin 6 200KΩ	Pin 10 ▰35Ω	Pin 11 ǂ680KΩ	Pin 12 .1Ω			

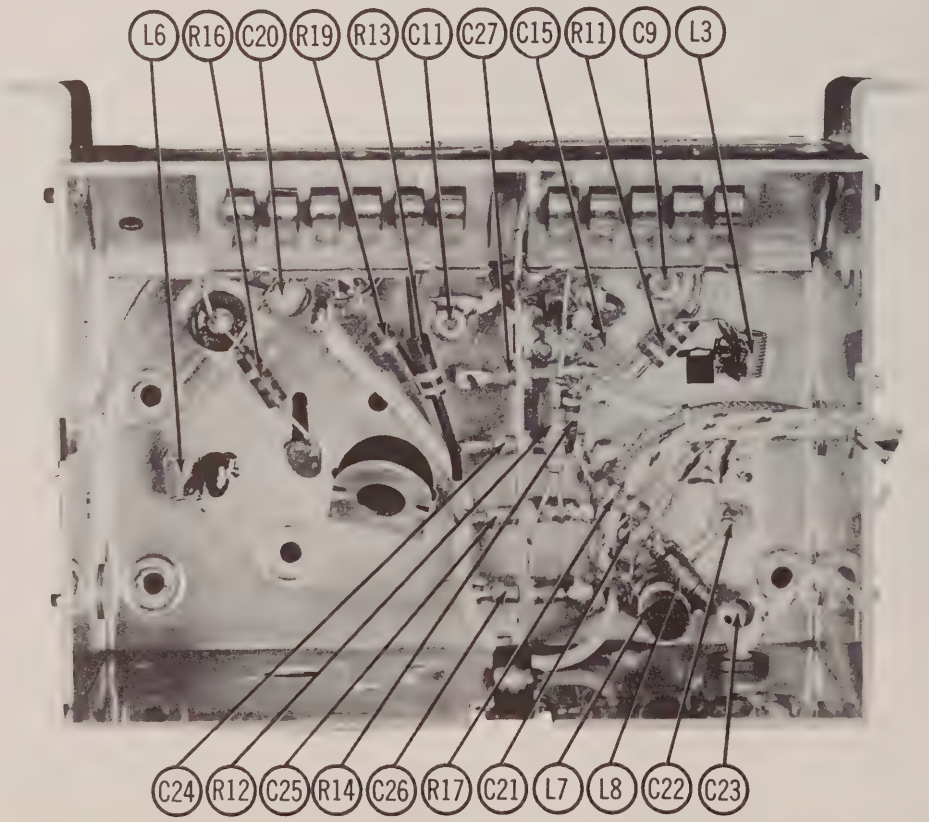
ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS OTHERWISE SPECIFIED.
ǂ MEASURED FROM 120 VDC LINE
† MEASURED FROM PIN 4 OF V10.
▰ MEASURED FROM PIN 3 OF V16.
♦ TAKEN WITH RADIO POSITION.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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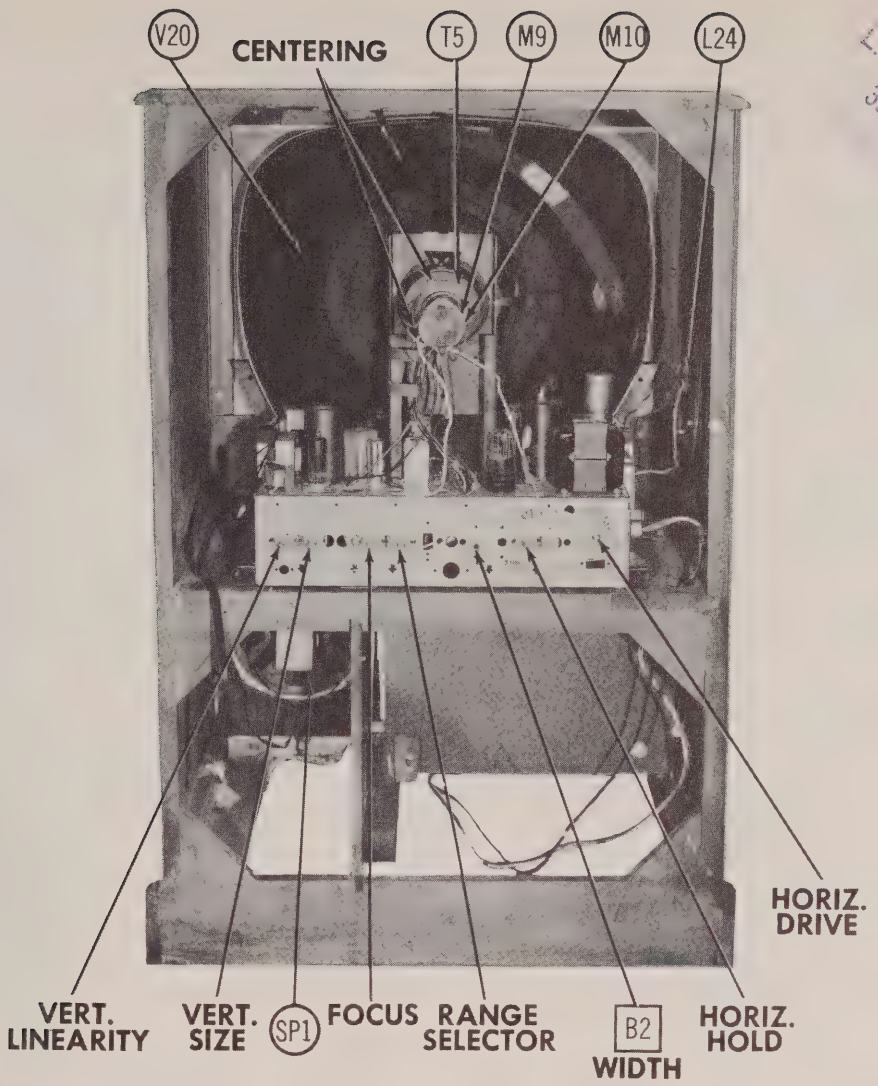
3924 MEADE ST.
[illegible], COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold control for horizontal synchronization without bending of vertical lines near the top of the picture.

If unable to obtain satisfactory horizonal synchronization by means of the horizontal hold control adjust the horizontal frequency slug (B1).

Turn B1 counter clockwise while turning the channel selector on and off until sync is lost. Turn B1 clockwise and note the number of diagonal bars just before sync pull in. There should be not less than 2 bars if the horizontal section is operating normally. Continue turning B1 clockwise until sync is lost again, then turn B1 counter clockwise and note the point where sync pull in occurs. Turn B1 an addition $\frac{1}{2}$ turn counter clockwise.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal drive control for the best compromise between brightness and horizontal linearity.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "LOSS OF HIGH VOLTAGE".

INSUFFICIENT SWEEP

Substitute V14, V15 and V16. Check adjustment of horizontal drive control and width coil, (B2). Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check C74, C73, C72, T3, yoke and other components associated with V16 and V15.	Check C69, C70, C71 and other components of the coupling network between V14 and V15.

DRIVE LINES

Check setting of drive control. Substitute V15 and V16. Check C72, C73, T3 and other components associated with the horizontal output stage.

COMPRESSED AT LEFT SIDE

Substitute V15 and V16. Check T3, C72, C73 and other components of the horizontal output stage.

FOLDS

Substitute V15 and V16. Proceed as outlined under "HORIZONTAL, DRIVE LINES".

XMAS TREE EFFECT

Substitute V14. Check C67 for open. Check L23 for shorted turns. Check other components of the horizontal oscillator stage.

VERTICAL

LOSS OF SWEEP

Substitute V12. Check waveform at W7.

If Satisfactory	If Unsatisfactory
Check T4, R70, yoke and other components associated with the vertical output stage.	Check C4, C60, C61, T2, C58, C59 and other components associated with the vertical oscillator stage.

INSUFFICIENT SWEEP

Substitute V12. Proceed as outlined under "LOSS OF SWEEP". Check C2D for leakage or open.

COMPRESSED AT BOTTOM

Substitute V12. Check C2D, C4, T4, yoke and other components of the vertical output stage.

COMPRESSED AT TOP

Substitute V12. Check C4, C60, C61, T4, yoke and other associated components.

FOLDS

Substitute V12. Check components of the vertical oscillator and output stages.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V13 and V14. Check C63, C64, C65, C66 and other components associated with V13 and V14.

CRITICAL SYNC

Substitute V13 and V14. Check C65, C66, C63, C64 and other components associated with V13 and V14.

PULLING PICTURE

Substitute V13 and V14. Check C65, C66 and other components associated with V13 and V14.

VERTICAL

LOSS OF SYNC

Substitute V12. Check C56, C57, C58, R65, R66, R4, T2 and C59. Check other components associated with V12.

CRITICAL SYNC

Substitute V11 and V12. Proceed as outlined under "LOSS OF SYNC".

TRIGGERING

Substitute V11 and V12. Check circuit near these tubes for filament lead dress. Check components associated with V11 and V12.

VIDEO

LOSS OF VIDEO

Substitute V6. Check waveform at W1.

If Satisfactory	If Unsatisfactory
Check L16, L18, L19, R42, C42 and picture tube.	Substitute video detector crystal. Check components associated with detector assembly.

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC trap, A10, for proper adjustment.

POOR RESOLUTION

Check video amplifier components for change of value. Check video IF tubes for weak and video IF components for change of value. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check video detector crystal. Check associated components. Check picture tube.

SMEAR

Substitute V6 and video detector crystal. Check L16, L18 and L19 for open. Check R42, R43 for change of value. Check C2C, C39, C40, C42 for leakage or open.

ONE BLACK BAR ACROSS PICTURE

Check RF tuner, video IF and video amplifier tubes for heater to cathode leakage. Check AGC filter for open or leaky. Check B+ filter for excessive ripple.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
B	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AH6	6AH6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amplifier	6C4	6C4	6BG	
V10	Audio Output	6W6GT	6W6GT	7S	
V11	Sync Separator-Sync Phase Inv.	6SN7GT	6SN7GT	8BD	
V12	Vert. Oscillator-Vert. Output	12BH7	12BH7	9A	
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V16	Damper	12AX4GT	12AX4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	AM Converter	6BE6	6BE6	7CH	
V19	AM IF Amplifier	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V20A	21FP4A	21FP4A		12C	① Circuit changes necessary.
		21FP4 ①		12C	
B	21MP4	21MP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	■140	150	4245	AFHS1-70		XA004		FP117	R1267	
C2A	▲100	300								
B	▲200	150	4246	AFHS4-125		D109		FP419.4	TVL-4561	
C	■10	300								
D	30	150								
C3A	▲200	150	4243	AFHS2-109		BR415		FP216.1	TVL-2444	
B	▲5	150				XB006				
C4	20	450	4233	PRS450/20		BR2045A		TC75	TVA-1709	
C5	10	50	4244	PRS50/10		BR105		TC32	TVA-1304	
C6	5	50	4209	PRS150/4		BR550		TC30	TVA-1303	
C7	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C8	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C9	3-9				829-10					
C10	3			SI3NP0			NP0K-030	ZT-553		
C11	.5-3				829-3			CT565A		
C12	51			SI51	D6-500	TM5Q5	GP1K-510	UC-545	5GA-Q5	
C13	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C14	1000			CN-1-001	MFT-1000				503C-D1	
C15	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C16	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C17	.5-3				829-3			CT565A		
C18	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCCB-Q1	
C19	5			SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C20	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C21	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	300			SI300	D6-301	TM5T3	GP2K-301	UC-533	5GA-T3	
C24	1000			CN-1-001	MFT-1000				503C-D1	
C25	1000			CN-1-001	MFT-1000				503C-D1	
C26	1000			CN-1-001	MFT-1000				503C-D1	
C27	1000			CN-1-001	MFT-1000				503C-D1	
C28	.1	400	4150	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C29	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C30	1000		14031	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C32	1000		14031	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	1000		14031	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C36	10		14036	SI10	D6-100	5W5Q1	GP1K-100	DC-541	5GA-Q1	
C37	5		4093	SI5	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5GA-V5	
C38	.47	200	4172	P288-47		PJ2P5		PT405	2TM-P47	
C39	.1	200	4143	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C40	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C41	30		4043							
C42	.1	400	4150	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C43	2.2		4069							
C44	68		4046							
C45A	4000		4036	BPD-2X004	D6-402	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C46	330		4065	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C47	1000		14031	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C48	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C49	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C50	.022	600	4124	P688-022	DD-203	PTE6S22		PT6122	6TM-S22	
C51	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	Note 1
C52	.001	400	4174	P688-001	D6-102	PTE6D1	801-001	PT621	4TM-D1	
C53	220		4084							
C54	.0047	600	4127	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C55	.047	400	4148	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C56	.0047	400	4127	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C57	.0047	400	4127	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	

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PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C58	.01	400	4143	P488-01	DS-103	PTS2S1	GP2-333-103	PT411	4TM-S1	
C59	.0047	400	4128	P688-0047	DS-472	PTS2D47	GP2-333-472	PT2347	6TM-D47	
C60	.047	400	4148	P488-047	DF-503	PTS2S47		PT2147	4TM-S47	
C61	.047	400	4148	P488-047	DF-503	PTS2S47		PT2147	4TM-S47	
C62	5000		4029	BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C63	.001	400	4174	P688-001	DS-102	PTS2D1	80L-001	PT521	4TM-D1	
C64	.001	400	4174	P688-001	DS-102	PTS2D1	80L-001	PT521	4TM-D1	
C65	.0047	400	4128	P688-0047	DS-472	PTS2D47	GP2-333-472	PT2347	6TM-D47	
C66	.047	200	4147	P288-047	DF-503	PTS2S47		PT2147	2TM-S47	
C67	3900	500	4085	1464-004		IDR5D4		MCM463	MS-24	
C68	470	500	14009	1469-0005		SRST5		MCM245	MS-35	
C69	.001	600	4174	P688-001	DS-102	PTS6D1	80L-001	PT521	6TM-D1	
C70	470	500	14009	1469-0005		SRST5		MCM245	MS-35	
C71	5000		4029	BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C72	.0047	600	4127	P688-0047	DS-472	PTS6D47	GP2-333-472	PT2347	6TM-D47	
C73	68	3000	14042	HVD30-0000-68					30GA-Q68	
C74	.1	600	4144	P688-1	DF-104	PTS6P1		PT601	6TM-P1	
C75	47			HVD15-0000-47	DS-470			MCL447	20GA-Q47	
C76	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	Note 1
C77	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	Note 1
C78	.047	400	4148	P488-047	DF-503	PTS2S47		PT4147	4TM-S47	
C79	.1	600	4144	P688-1	DF-104	PTS6P1		PT601	6TM-P1	
C80	.047	400	4148	P488-047	DF-503	PTS2S47		PT4147	4TM-S47	
C81	10000		4097	BPD-01	DD-1032	TM5S1	81L-01	DC-5U	5HK-S1	
C82	10000		4097	BPD-01	DD-1032	TM5S1	81L-01	DC-5U	5HK-S1	
C83	47		14005	S147	DS-470	TM5Q5	GPMK-470	UC-5447	5GA-Q47	
C84	.022	200	14207	P488-022	DD-203	PTS4S22		PT4122	4TM-S22	
C85	.047	400	4148	P488-047	DF-503	PTS2S47		PT4147	4TM-S47	
C86	.047	400	4148	P488-047	DF-503	PTS2S47		PT4147	4TM-S47	

Note 1. Not used in all Models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2500Ω	½	H4892	QJ-403 *	RTV-379		UF252L	Contrast-Panel
B	1 Meg	½					UR16T35 †	Volume-Tap④ 300KΩ-Rear
C	Switch						US-26	Attach to RIB
R2A	1 Meg	½	H4896	QU-137	AG-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	5 Meg	½	H4895	QU-141	AG-85-S	AB-97	U-67	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	850KΩ	½	H4893	QU-133	AG-58-S		U-50	Vert. Hold-Note 1
B	Shaft		Not Req.	Not Req.	KS8-3		Not Req.	Attach to R4A
R5A	750Ω	½	H4875	QU-105	AG-8-S	AB-5	U-4	Vert. Linearity
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R5A
R6A	5 Meg	½	H4878	QU-141	AG-85-S	AB-97	U-67	Vert. Size-Note 2
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R6A
R7A	1.5Meg	½	H4871	QU-138	AG-83-S	AB-75	U-56	Focus
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R7A
R8A	120KΩ	½	H4872	QU-125	AG-47-S	AB-35	U-41	Horiz. Hold-Note 3
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R8A
R9A	25KΩ	½	H4859	QU-120	AG-40-S	AB-26	SU-29	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R9A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-111 & P1-114 (Panel) B13-137 & R1-202 (Rear) & SWITCH 76-1.

† UNIVERSAL REPLACEMENT-(MALLORY EXACT DUPLICATE PART NO. UE3823).

Note 1. Connect a 330KΩ resistor in series with right hand terminal of the control & the lead connecting to the same terminal of the original control . (Control viewed from shaft end, terminals down).

Note 2. Connect a 1 Meg resistor in series with right hand terminal of the control & the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down).

Note 3. Connect a 47KΩ resistor in series with right hand terminal of the control & the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R10	15KΩ	½		BTS-15K	
R11	47KΩ	½			Note
R12	330KΩ	½		BTS-330K	
R13	47KΩ	½		BTS-470	
R14	180KΩ	½			
R15	10KΩ	½			
R16	220KΩ	½			
R17	3900Ω	½		BTS-3900	
R18	10KΩ	½		BTS-10K	
R19	15KΩ	½		BTS-15K	
R20	100KΩ	½	4511	BTS-100K	
R21	100KΩ	½	4511	BTS-100K	
R22	220Ω	½	4563	BTS-220	
R23	100KΩ	½	4511	BTS-100K	
R24	1000Ω	½	4659	BTS-1000	
R25	4700Ω	½	4576	BTS-4700	
R26	47Ω	½	4639	BTS-47	
R27	1000Ω	½	4659	BTS-1000	
R28	10KΩ	½	4597		
R29	1000Ω	½	4659	BTS-1000	
R30	47Ω	½	4639	BTS-47	
R31	1000Ω	½	4659	BTS-1000	
R32	8200Ω	½	4651	BTS-8200	
R33	150Ω	½	4616	BTS-150	
R34	1000Ω	½	4659	BTS-1000	
R35	5600Ω	½	4629	BTS-5600	
R36	1.5Meg	½	4605	BTS-1.5Meg	
R37	470KΩ	½	4606	BTS-470K	
R38	1.5Meg	½	4605	BTS-1.5Meg	
R39	100KΩ	½	4511	BTS-100K	
R40	1 Meg	½	4614	BTS-1 Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R41	150Ω	½	4616	BTS-150	
R42	4700Ω	2	24558	BTB-4700	
R43	33KΩ	1	24629	BTA-33K	
R44	150KΩ	½	4589	BTS-150K	
R45	150Ω	½	4616	BTS-150	
R46	2200Ω	½	4650	BTS-2200	
R47	270Ω	½	4663	BTS-270	
R48	33KΩ	½	4586	BTS-33K	
R49	10KΩ-5%	½	4624	BTS-10K-5%	
R50	10KΩ 5%	½	4624	BTS-10K 5%	
R51	2.2Meg	½	4602	BTS-2.2Meg	
R52	1500Ω	½	4630	BTS-1500	
R53	33KΩ	½	4586	BTS-33K	
R54	33KΩ	½	4586	BTS-33K	
R55	1000Ω	½	4659	BTS-1000	
R56	10KΩ	½	4597	BTS-10K	
R57	470KΩ	½	4606	BTS-470K	
R58	2.2Meg	½	4606	BTS-2.2Meg	
R59	680KΩ	½	34668	BTS-680K	
R60	560KΩ	½	4590	BTS-560K	
R61	22KΩ	½	4628	BTS-22K	
R62	2200Ω	½	4650	BTS-2200	
R63	3900Ω	½	4527	BTS-3900	
R64	2700Ω	½	4579	BTS-2700	
R65	47KΩ	½	4559	BTS-47K	
R66	10KΩ	½	4597	BTS-10K	
R67	3300Ω	½	4607	BTS-3300	
R68	1800Ω	½	4640	BTS-1800	
R69	8750Ω	3	4760		
R70	120Ω	½	4546	BTS-120	
R71	100KΩ	½	4571	BTS-100K	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R72	100KΩ	½	4571	BTS-100K	
R73	4.7Meg	½	4544	BTS-4.7Meg	
R74	470KΩ	½	4506	BTS-470K	
R75	15Ω	2	14509		
R76	15000Ω	½	4630	BTS-1500	
R77	82000Ω	½	4651	BTS-8200	
R78	120KΩ	½	4548	BTS-120K	
R79	5600Ω	½	4629	BTS-5600	
R80	470KΩ	½	4622	BTS-470K	

Note. Some Models may use a 47Ω resistor in this application.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R81	2.2Ω	½	4735		
R82	7.5Ω	5	4762		
R83	1000Ω	½	4659	BTS-1000	
R84	22KΩ	½	4628	BTS-22K	
R85	180Ω 5%	½	14615	BTS-180 5%	
R86	15KΩ	2	24600	BTB-15K	
R87	47KΩ	½	4559	BTS-47K	
R88	2.2Meg	½	4606	BTS-2.2Meg	

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ⑨ .625A tap ⑩ 12.6VAC ⑩ .59A tap ⑪ 6.3VAC ⑪ 7.2A	6.3VAC ⑩ 1.26A			5174					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	70Ω	320Ω	5176	A-8125	A-3003	TBO-5	A-97X	208T9⑪	Vert. Osc. Trans.
T3	527Ω tap ⑥ 5.2Ω, 38.2Ω, 400, 57Ω	0Ω	5035		RVO-8	TFB-13⑧	D-19 ①	230T1 ⑪	Horiz. Output Trans.
T4		750Ω tap ⑫	5177	A-8140 ① ⑬	A-3081 ④	TSO-6 ⑫ ⑬	A-103X ⑫ ⑬		Vert. Output Trans.
T5A		35Ω	9761	DY-10A ⑤	MDF-30 ⑤	TY-4 ⑤	Y-20 ⑤		Horiz. Deflection Coils
B		3.4Ω							Vert. Deflection Coils
T6		12Ω	5464	WC-5 ⑤ ⑦	MWC-1 ⑤ ⑦	TWL-1	WC-11 ⑧	212R1	Width Coil

① Connect terminal 7 to terminal 8 and wire as in original circuit.
④ Connect as auto trans.
⑤ Drill new mounting holes
⑥ Drill one new mounting hole.
⑦ Use original deflection coil network
⑧ Enlarge mounting hole.
⑨ Do not use secondary.
⑩ Connect to coded blue and red terminals.
⑪ Wire as in original circuit except, jumper terminal 7 to 8. Connect original terminal 7 to new terminal 9, original terminal 4 to jumpered terminal 7 or 8, original terminal "T" to new terminal 5.
⑫ See instruction sheet packed with unit for terminal connections.
⑬ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	2.86KΩ	3.3Ω	269Ω	1.5Ω	5173	A-3949	A-3018	RO-302 ①	S-1X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA HOFFMAN PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3.3Ω	9090	ST-115 Mod. P8-V	8A21	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (D. CURRENT 1000 ᴍA)	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.180ADC	61.8Ω	1.74 Hy.	5175	C-3327	C-3996 ①	TR-1733 ①	C-21X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L3A	Ant. Coil	0Ω CT	0Ω	5360K				Channel 2
B	Ant. Coil	0Ω CT	0Ω	5361K				Channel 3
C	Ant. Coil	0Ω CT	0Ω	5362K				Channel 4
D	Ant. Coil	0Ω C T	0Ω	5363K				Channel 5
E	Ant. Coil	0Ω CT	0Ω	5364K				Channel 6
F	Ant. Coil	0Ω CT	0Ω	5365K				Channel 7
G	Ant. Coil	0Ω CT	0Ω	5366K				Channel 8
H	Ant. Coil	0Ω CT	0Ω	5367K				Channel 9
I	Ant. Coil	0Ω CT	0Ω	5368K				Channel 10
J	Ant. Coil	0Ω CT	0Ω	5369K				Channel 11
K	Ant. Coil	0Ω CT	0Ω	5370K				Channel 12
L	Ant. Coil	0Ω CT	0Ω	5371K				Channel 13
L3	Fil. Choke	0Ω						

COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L4	Neutr.Coil	0Ω						
L5A	RF, Mixer Grid & Osc. Coil	0Ω		5346K				Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω		5349K				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		5350K				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		5351K				Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		5352K				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		5353K				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		5354K				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		5355K				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		5356K				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		5357K				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		5358K				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		5359K				Channel 13
L6	Fil. Choke	0Ω						
L7	Conv.Plate	.4Ω						
L8	RF Choke	.2Ω						
L9	1st.Video IF	.2Ω	.2Ω	5446		19-1020	TV-113 *	6171 *
L10	2nd.Video IF	.2Ω	.2Ω	5444				
L11	3rd.Video IF	.2Ω	.2Ω	5456				Includes trap
L12	4th.Video IF	.4Ω	.4Ω	5445				
L13	Series Peaking Coil	2.4Ω		5186		19-3036		4624 17.6 Microhenries
L14	Series Peaking Coil	6Ω		5448		19-3180	TV-184	6180 172 Microhenries
L15	Shunt Peaking Coil	8.7Ω		5449		19-3300	TV-185	335 Microhenries
L16	Series Peaking Coil	10Ω		5450		19-4412	TV-186 †	4648 † 413 Microhenries wound on 8.2KΩ resistor
L17	4.5MC Trap	2Ω		5453		20-1004	TV-151	1470
L18	Shunt Peaking Coil	5Ω		5451		19-4121	TV-181 ■	6177 ■ 106 Microhenries wound on 6.8KΩ resistor
L19	Shunt Peaking Coil	14Ω		5452		19-4640		840 Microhenries wound on 3.3KΩ resistor 1.3 Microhenries
L20	Fil. Choke	0Ω		5181		19-3001	TV-189	4604
L21	Sound IF	1.2Ω		5454		17-3400	TV-151	1470
L22	Ratio Det.	4Ω	.7DCT	5443		17-1053	TV-120	1468 Tertiary Winding-.65Ω
L23	Horiz. Osc.	58Ω		5447		19-1576	TV-183	6210
L24	AM Loop Ant.	0Ω	1.8Ω	5465				
L25	AM Osc.Coil	11Ω		5453				Tapped ⑨ 1Ω
L26	Input IF	13Ω	14Ω	5171		16-6758	BC-352	12-C1
L27	Output IF	13Ω	14Ω	5172		16-6758	BC-353	12-C2

■ Parallel with 6.8KΩ resistor
* Enlarge mounting hole.
† Parallel with 8.2KΩ resistor

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA HOFFMAN PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No
M1	.180ADC	9735	NK5	6Q4	1090	83300	300
M2	.180ADC	9735	NK5	6Q4	1090	83300	300

PHONO CARTRIDGE

ITEM No.	HOFFMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. STYLUS	REMARKS
M3		ACD-J	A-1 or A-3	W22AB	A65MG or A52A	96	0-1 or 3-1 & 0-3 or 3-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

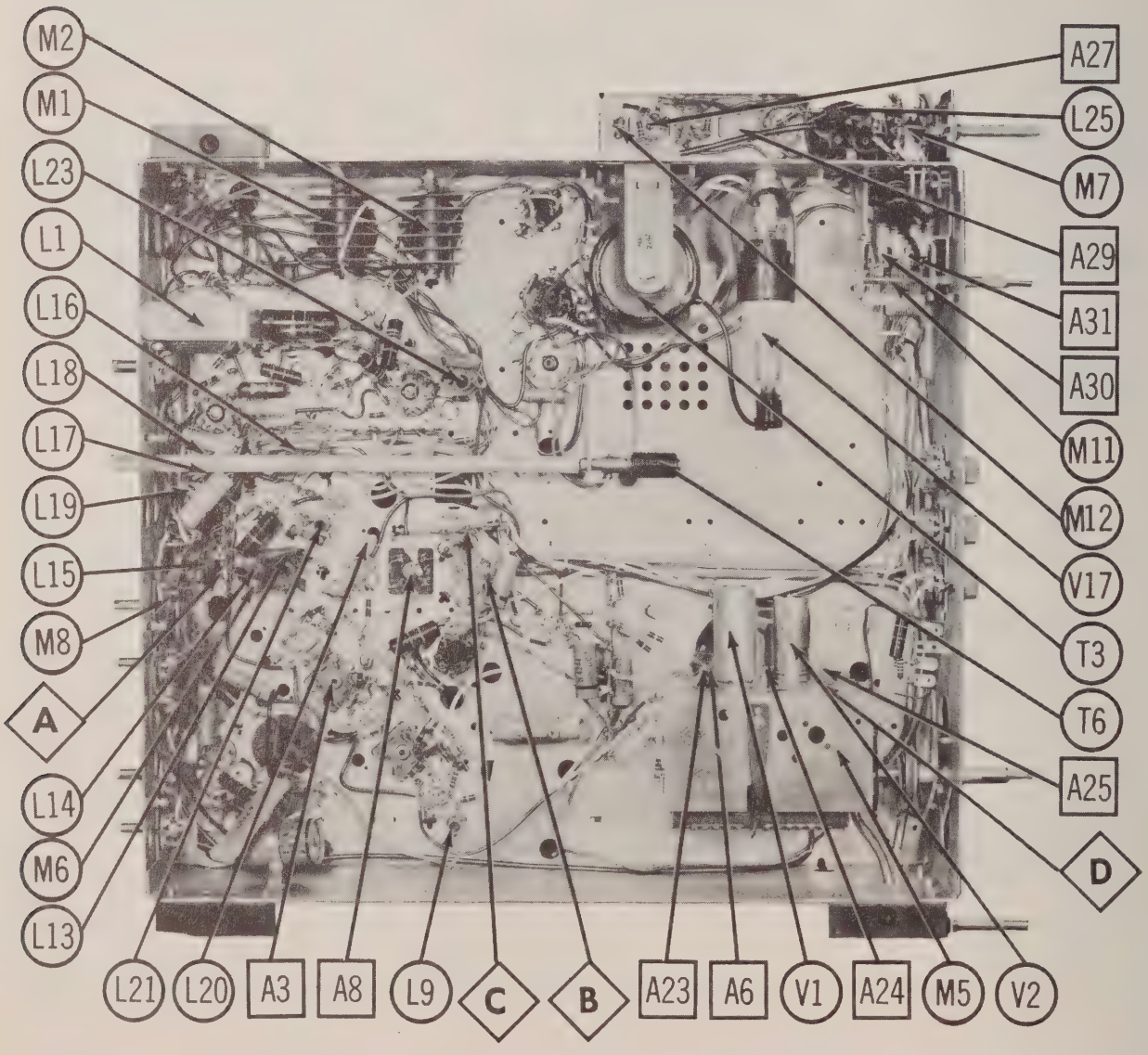
ITEM No.	HOFFMAN PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M4		W-30MGS or W-30MGA & W-30S or W-30A	JP-30LP or JPS-30LP & JP-30 or JPS-30	

PROPERTY OF ... FRIENDSHIP

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M5	RF Tuner	9755	
M6A	Crystal Diode	9075	1N60 Video Detector
B	Crystal Diode		1N64 Video Detector
M7	Function Selector	6034	TV-Radio-Phono
M8	Switch	6035	Range Selector
M9	Centering Magnet	9722	
M10	Ion Trap	9702	
M11	Tuning Capacitor	4417	11-367MMF, 9-100MMF
M12A	Crystal Diode	9757	1N65 Detector
B	Crystal Diode		1N51 Detector
	Cabinet	7679	Model 21M903
	Cabinet	7680	Model 21B904
	Cabinet	7681	Model 21P905
	Cabinet Back	33580	Includes AC Cord
	Safety Glass	774	
	Mask	3883	Frame Liner
	Cover (Bottom)	3873	
	Cover (Front Controls)	33584C	
	Knob	3866C	Channel Selector
	Knob	3867C	Fine Tuning
	Knob	3864C	Off/On Volume
	Knob	3865C	Contrast
	Knob	3813	Brightness
	Knob	3814	Vertical Hold
	Knob	3862	Tone
	Knob	3868	Function Selector
	Knob	3870C	Radio Tuning
	Dial	3869C	Function Selector
	Dial	3871C	Radio Tuning



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENT.

TROUBLE SHOOTING AIDS (CONT.)

AUDIO

WEAK OR NO SOUND

Substitute V7, V8, V9 and V10. Check stages of V9 and V10 by switching to AM radio.

If Satisfactory	If Unsatisfactory
Check alignment of ratio detector and TV sound IF stages. Check associated circuit components.	Check components associated with V9 and V10.

BUZZ

Realign ratio detector. If buzz is still objectionable, substitute V8 then re-adjust A8 and A9. Check C6 for leakage.

DISTORTED

Check stages of V9 and V10 by switching to AM radio.

If Distorted	If Undistorted
Substitute V9 and V10 check associated circuit components.	Subsitute V7 and V8. Check alignment of TV sound IF and ratio detector . Check associated circuit components.

POWER

SMALL AND/OR DIM PICTURE

Substitute V10, V14, V15, V16 and V17. Measure B+.

If Low	If Satisfactory
Substitute M1 and M2. Check C1, C2A, C2B, C3A. Check R82 and L1.	Proceed as outlined under "INSUFFICIENT HIGH VOLTAGE".

DIM PICTURE WEAK SOUND

Substitute V10. Measure B+ . Proceed as outlined under "SMALL AND/OR DIM RASTER".

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V14, V15, V16, V17 and V10. Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check R81, T3, yoke and other associated components.	Check C69, C70, C71, R9 and other components associated with V14 and V15.

INSUFFICIENT HIGH VOLTAGE

Substitute V14, V15, V16, V17 and V10. Proceed as outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Substitute V15, V16, V17 and V10. Check R81 for change of value. Check picture tube. Check T3 and other associated components.

GENERAL

RASTER NO SOUND NO PICTURE

Substitute V1, V2, V3, V4 and V5. Check video detector crystal. Substitute V6. Check components associated with video IF and video amplifier stages.

RASTER SOUND NO PICTURE

Check L16, L18, L19, C42 and R43 for open or change of value. Check picture tube.

INTERMITTANT STREAKS

Check high voltage section for corona discharge and arcing.

TOTAL LOSS OF SYNC

Substitute V11. Check associated circuit components.

POOR FOCUS

Check adjustment of focus control. Check potentials applied to picture tube elements. If satisfactory, check picture tube.

SET DEAD

Check fuseable resistor, R82 for open. Check switch on volume control. Check AC interlock assembly.

CAUTION!!

To prevent dangerous electrical shock and damage to test equipment and/or this receiver, a line insolation transformer of at least 140 Watts capacity should be used during bench servicing.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may accomplished by removing the Channel Selector and Fine Tuning knobs.

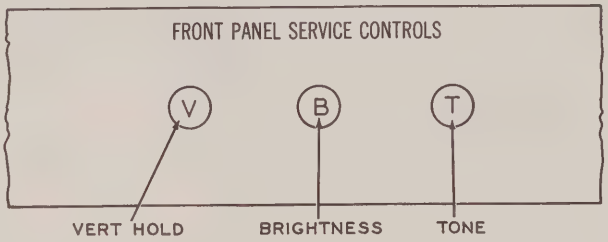
PICTURE TUBE SAFETY GLASS CLEANING

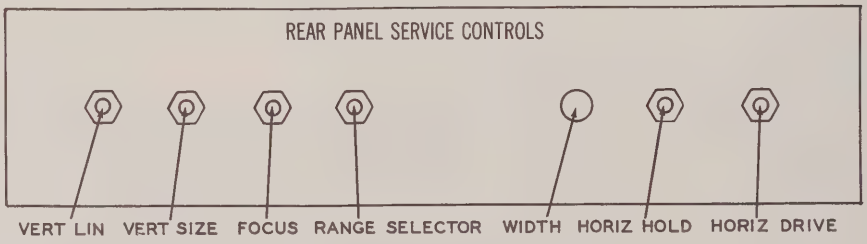
Remove 3 wood screws at top of safety glass. Remove wood strip. Tilt safety glass out at top and lift from slot at bottom. Glass should be held in during this operation. USE EXTREME CAUTION WHEN REMOVING SAFETY GLASS.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See Disassembly Instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz. Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the Horiz. Hold Control at the center of its range and adjust the Horiz. Freq. slug until the picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

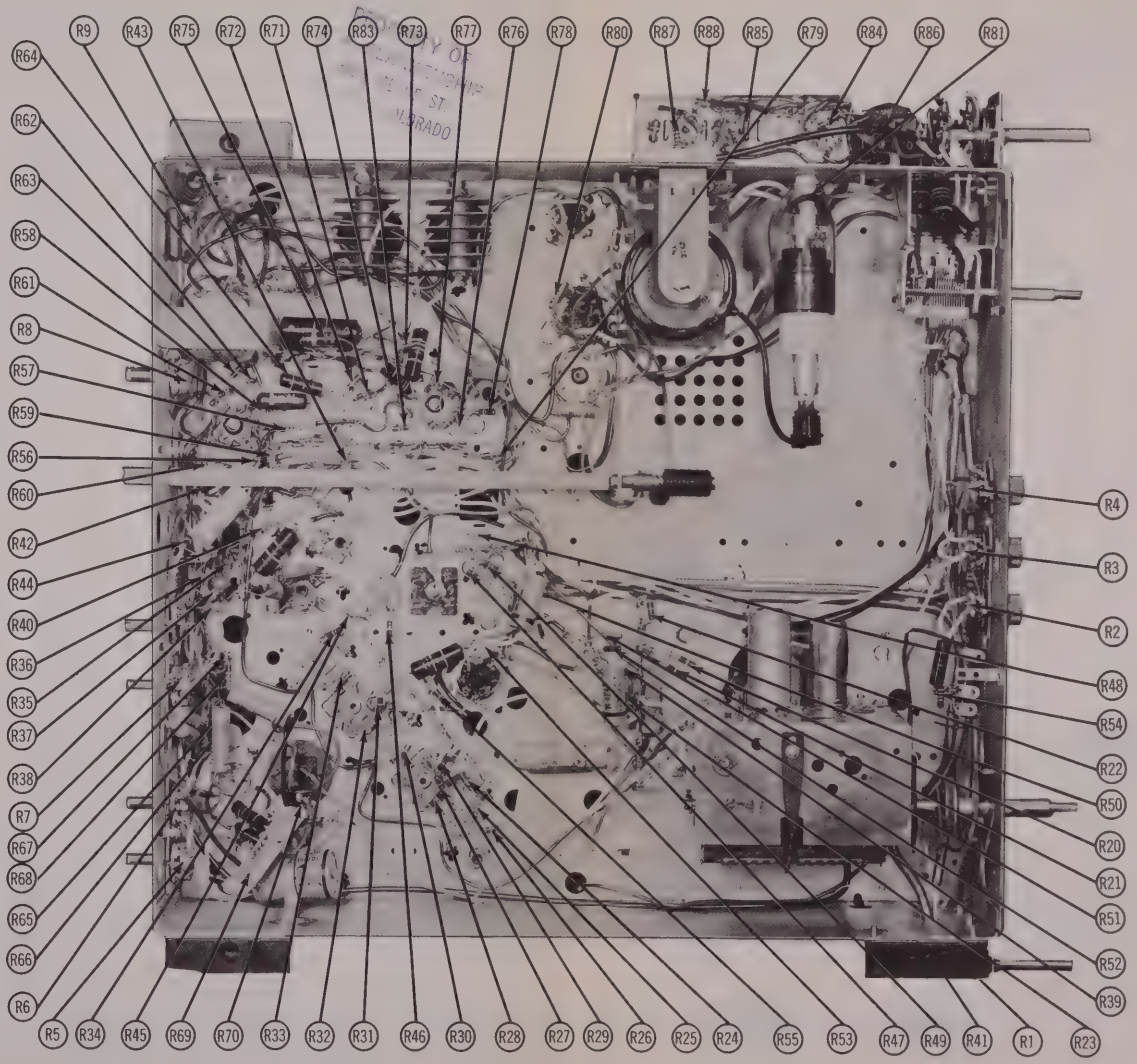
To eliminate Sound IF Detector Buzz, adjust the ratio detector secondary L22 located on top of chassis. (See tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push on type control knobs from front panel.
2. Disconnect built-in antenna and transmission line.
3. Remove 18 wood screws. Remove rear cover.
4. Disconnect speaker, phono AC line, Audio lines and AM loop antenna.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 wood screws. Remove speaker.

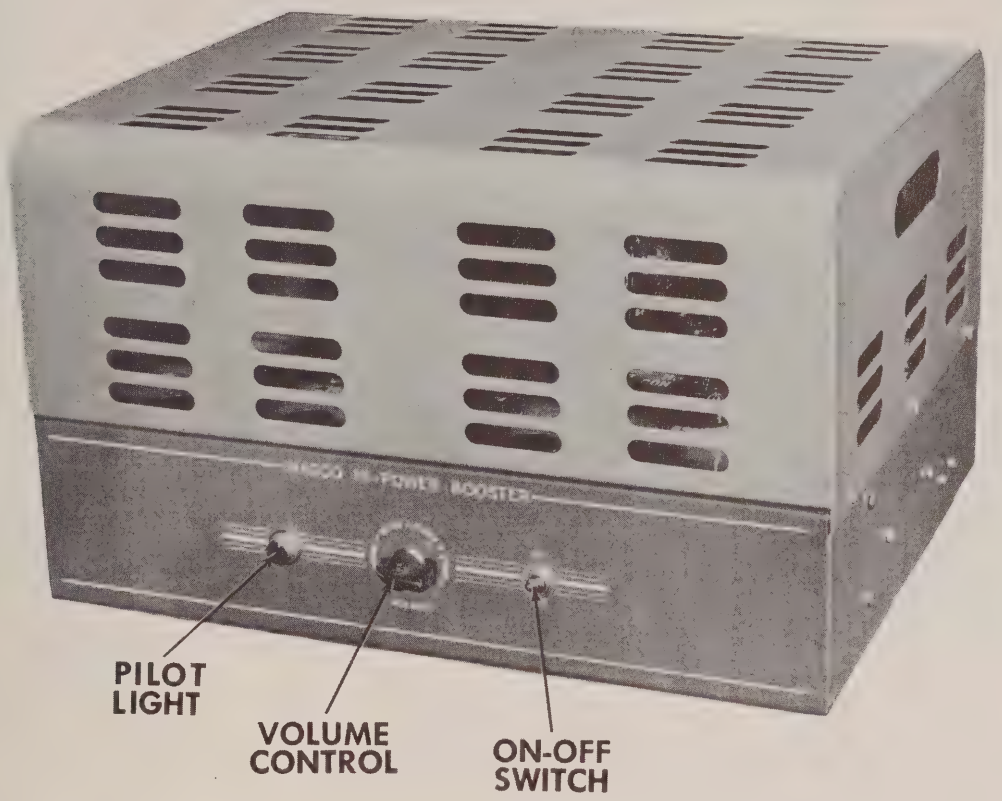


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MASCO
MODEL MB-125

PROPERTY OF
L. F. BLANKENSHIP
[illegible] MONROE ST.
DENVER, COLORADO

MASCO
MODEL MB-125



MASCO
MODEL MB-125

TRADE NAME	Masco Model MB-125
MANUFACTURER	Mark Simpson Mfg. Co., 32-28 49th. St., Long Island City, N.Y.
TYPE SET	AC Operated 125 watt Booster Audio Amplifier
TUBES (Eight)	Types 6SL7GT AF Amp.-Phase Inv., 6SN7GT Driver, 6SN7GT Driver (2) 807 Audio Output, 6SN7GT Voltage Regulator, 5Y3GT Rectifier, 5R4GY Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.9 Amp. @ 117 Volts AC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SL7GT	15KΩ	†275KΩ	3.9KΩ	10Ω	†275KΩ	4.6KΩ	520Ω	520Ω	
V 2	6SN7GT	470KΩ	†122Ω	1.3KΩ	470KΩ	†122Ω	1.3KΩ	520Ω	520Ω	
V 3	6SN7GT	470KΩ	†122Ω	1.3KΩ	470K Ω	†122Ω	1.3KΩ	520Ω	520Ω	
V 4	807	520Ω	†122Ω	580Ω	0Ω	520Ω				ǂ73Ω
V 5	807	520Ω	†122Ω	580Ω	0Ω	520Ω				ǂ73Ω
V 6	6SN7GT	37KΩ	†122Ω	0Ω	37KΩ	†122Ω	0Ω	520Ω	520Ω	
V 7	5Y3GT	INF	10KΩ	INF	▲50.5Ω	INF	▲50Ω	INF	10KΩ	
V 8	5R4GT	INF	40KΩ	INF	67.3Ω	†4.8KΩ	62.4Ω	INF	40KΩ	

NOTE: 6.3VAC ACROSS FILAMENT (■).
▲ MEASURED FROM -39 VOLT LINE.
† MEASURED FROM PIN 8 OF V7.
ǂ MEASURED FROM PIN 8 OF V8.

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PARTS LIST AND DESCRIPTIONS

MASCO
MODEL MB-125

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier-Phase Inv.	6SL7GT	6SL7GT	8BD	
V2	Driver	6SN7GT	6SN7GT	8BD	
V3	Driver	6SN7GT	6SN7GT	8BD	
V4	Audio Output	807	807		
V5	Audio Output	807	807		
V6	Voltage Regulator	6SN7GT	6SN7GT	8BD	
V7	LV Rectifier	5Y3GT	5Y3GT	5T	
V8	HV Rectifier	5R4GY	5R4GY	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	16	450		PRS450/16		BR1645A		TC74	TVA-1708	
C2	16	450		PRS450/16		BR1645A		TC74	TVA-1708	
C3A	40	150		PRS150/50-30-20		EDL44215		3N532	TVL-1420	Red
B	40	150								Red
C	20	150								Green
C4	8	450		PRS450/8		BR845A		TC71	TVA-1704	
C5	50	50		PRS50/50		BR505		TC39	TVA-1308	
C6	2	1000		1009D-2.0		TJU10020		TX805	CR-21	
C7	.5	400		P488-5		PTE4P5		PT405	4TM-P5	Note
C8	.5	400		P488-5		PTE4P5		PT405	4TM-P5	Note
C9	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C10	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C11	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C12	220			SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C13	.1	600		689ZX-1		PJ6P1		PT601	6TM-P1	

Note: Some Models combine C7 and C8 in one .2MFD unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-010-188	QI3-133	AG-60-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	50Ω	2			A43-50		C50P *	Hum Balance-wire wound
B	Shaft				FKS-1/4			Attach to R2A

* Use Mallory washers (Part #203 & 212) to insulate control from chassis.

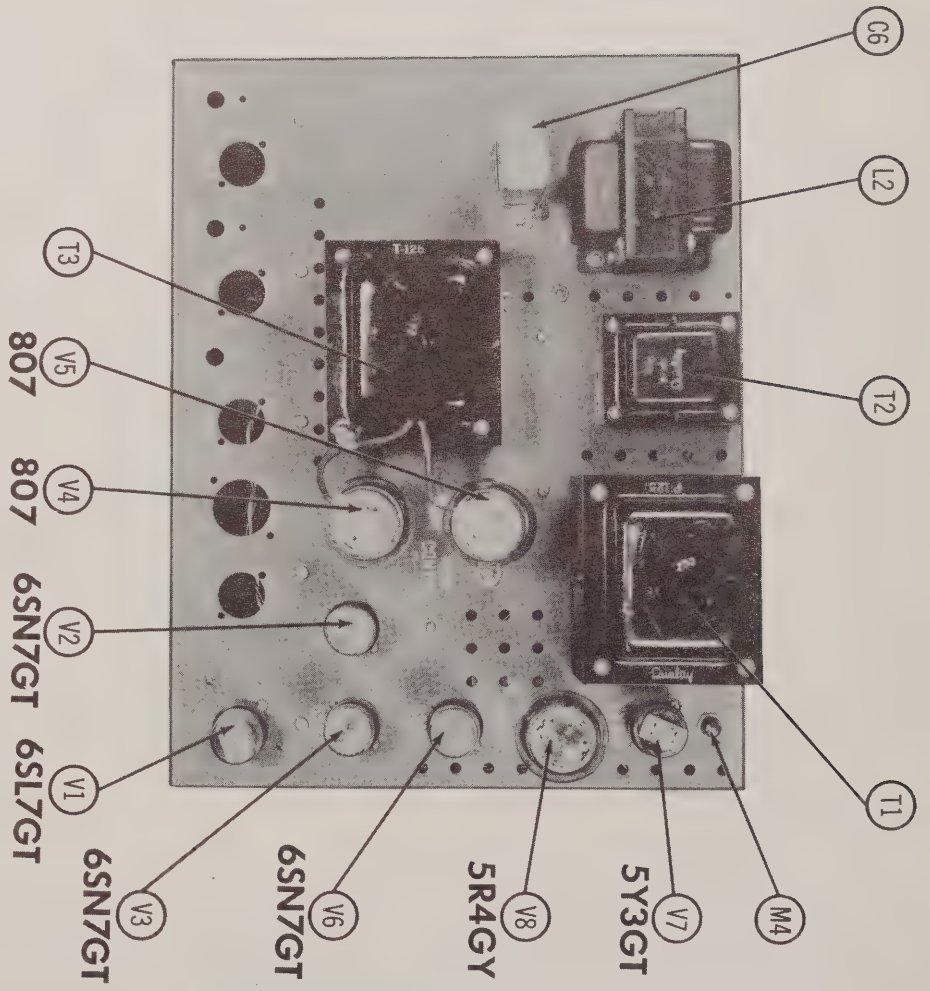
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R3	680Ω	½		BTS-680	
R4	3900Ω	½		BTS-3900	
R5	270KΩ	½		BTS-270K	
R6	3900Ω	½		BTS-3900	
R7	15KΩ	½		BTS-15K	
R8	470KΩ	½		BTS-470K	
R9	270KΩ	½		BTS-270K	
R10	470KΩ	½		BTS-470K	
R11	750Ω	½			
R12	470KΩ	½		BTS-470K	
R13	750Ω	½			
R14	4700Ω	½		BTS-4700	
R15	18Ω	½			

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R16	18Ω	½			
R17	470KΩ	½		BTS-470K	
R18	39KΩ	½		BTS-39K	
R19	47KΩ	½		BTS-47K	
R20	8200Ω	1		BTA-8200	Note 2
R21	470Ω	1		BTA-470	Note 2
R22	1000Ω	10		1 3/4A-1000	Note 1
R23	10KΩ	20		2D-10K	
R24	20KΩ	20		2D-20K	
R25	20KΩ	20		2D-20K	

Note 1. This resistor is adjustable.
Note 2. Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @1.7A	1960VCT .063ADC	552VCT .117ADC		P-125				

TRANSFORMER (FILAMENT)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T2	117VAC @.50A	5VAC 2A	5VAC 1.82A	6.3VAC @4A	F-125				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T3	8.2KΩ CT	140V tap @ 70Ω, @70V	33.6Ω CT	1.29 .84Ω .66Ω	T-125					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.115A	122Ω	7.9 Hy.	C-235	C-1001 ①	C-2993 ①		C-10X ①
L2	.064A	56Ω	4.73 Hy.	C-575	C-1412 ②	C-3187		

① Drill one new mounting hole.
② Drill new mounting holes.

(DRIVER) CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L3	.032ADC	140Ω CT	12.6 Hy.	C-60				

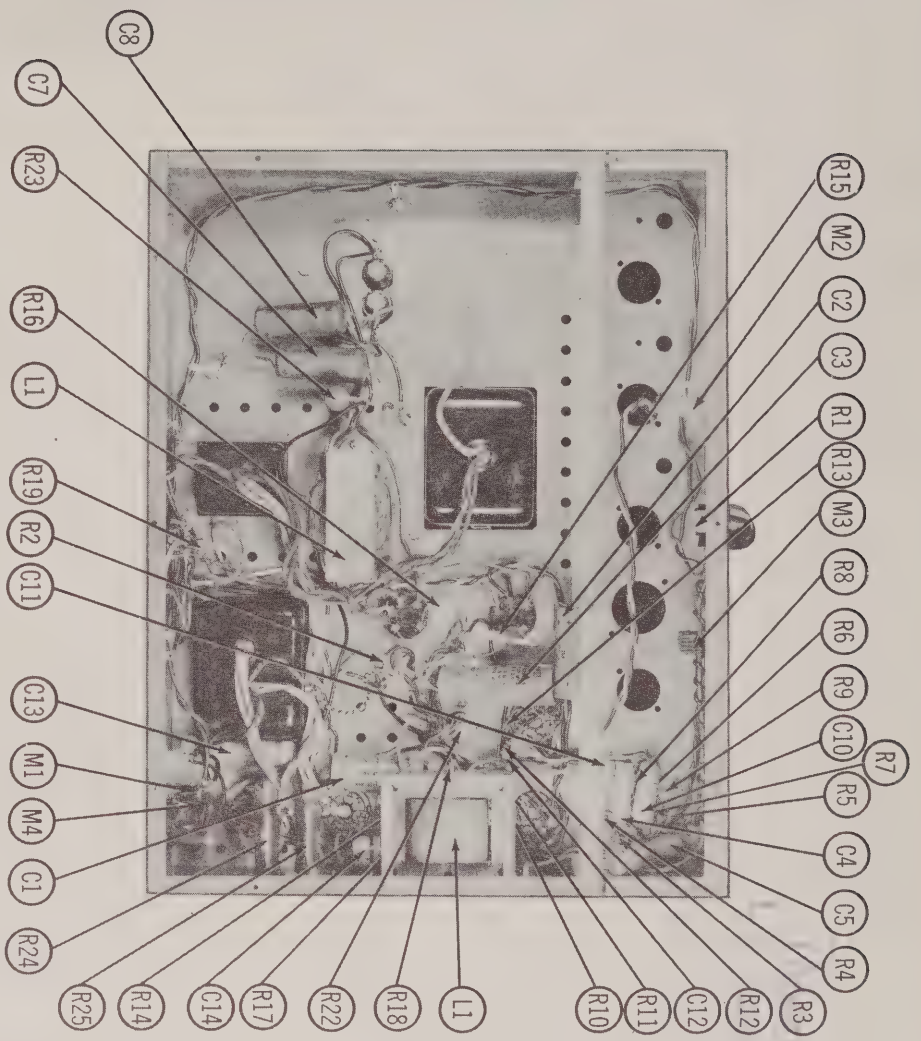
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MASCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5A 250V			312005 (3AG-5A)	342001	MTH5	HKP

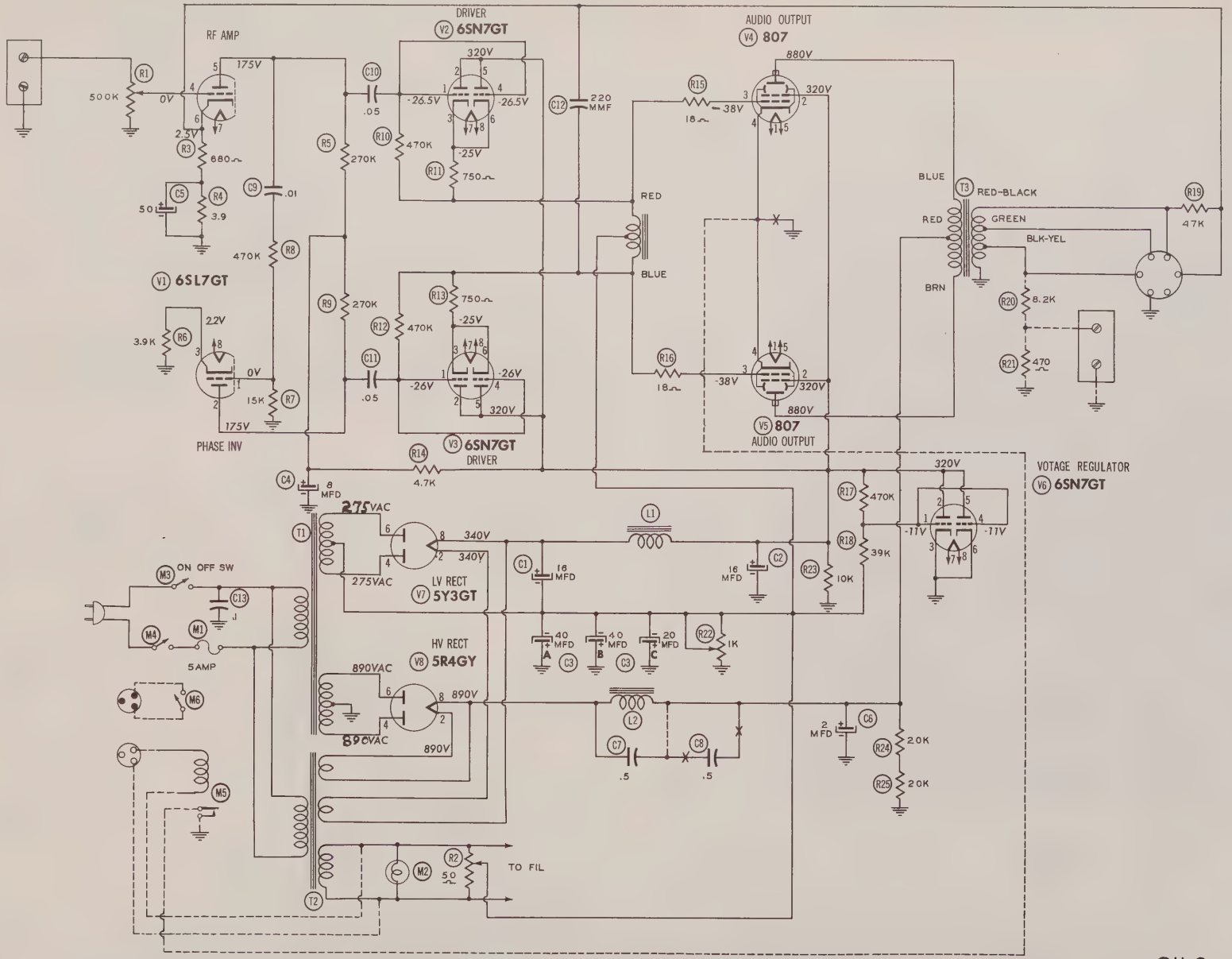
MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M2	Pilot Light		Type #47
M3	Switch		Off/On
M4	Switch		Interlock
M5	Relay Standby		Not used in all Models.
M6	Switch		Not used in all Models.

CHASSIS—BOTTOM VIEW



MASCO MODEL MB-125



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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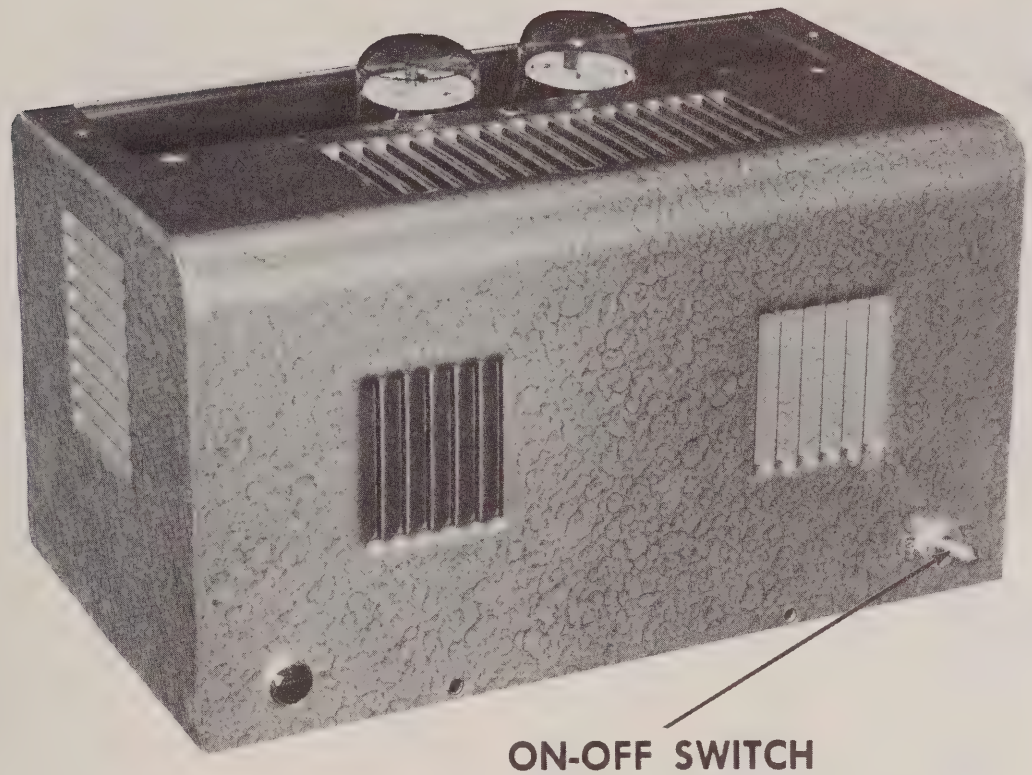
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RAULAND
MODEL BAU21



RAULAND
MODEL BAU21

TRADE NAME	Rauland Model BAU21
MANUFACTURER	Rauland-Borg Corp., 3523 Addison, Chicago 18, Ill.
TYPE SET	AC Operated Audio Amplifier
TUBES (Five)	6SJ7 Pre-Amp., 6SC7 AF Amp.-Phase Inv., (2), 6L6G Audio Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .93 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

RAULAND
MODEL BAU21

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RAULAND PART No.	STANDARD REPLACEMENT		
V1	Pre-Amplifier	6SJ7	6SJ7	8N	
V2	AF Amplifier-Phase Inverter	6SC7	6SC7	8S	
V3	Audio Output	6L6G	6L6G	7S	
V4	Audio Output	6L6G	6L6G	7S	
V5	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450		AFH4-17		DO16		FP476	TVL-4840	
B	■10	450								
C	▲10	450								
D	10	450								
C2	8	450		PRS450/8		BR845A		TC71	TVA-1704	
C3	40	25		PRS25/50		BR502A		TC29	TVA-1206	
C4	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C5	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C6	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C7	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C8	.0022	1600		P1688-0022		PTE16D22		PT16222	MB-D22	

CONTROLS

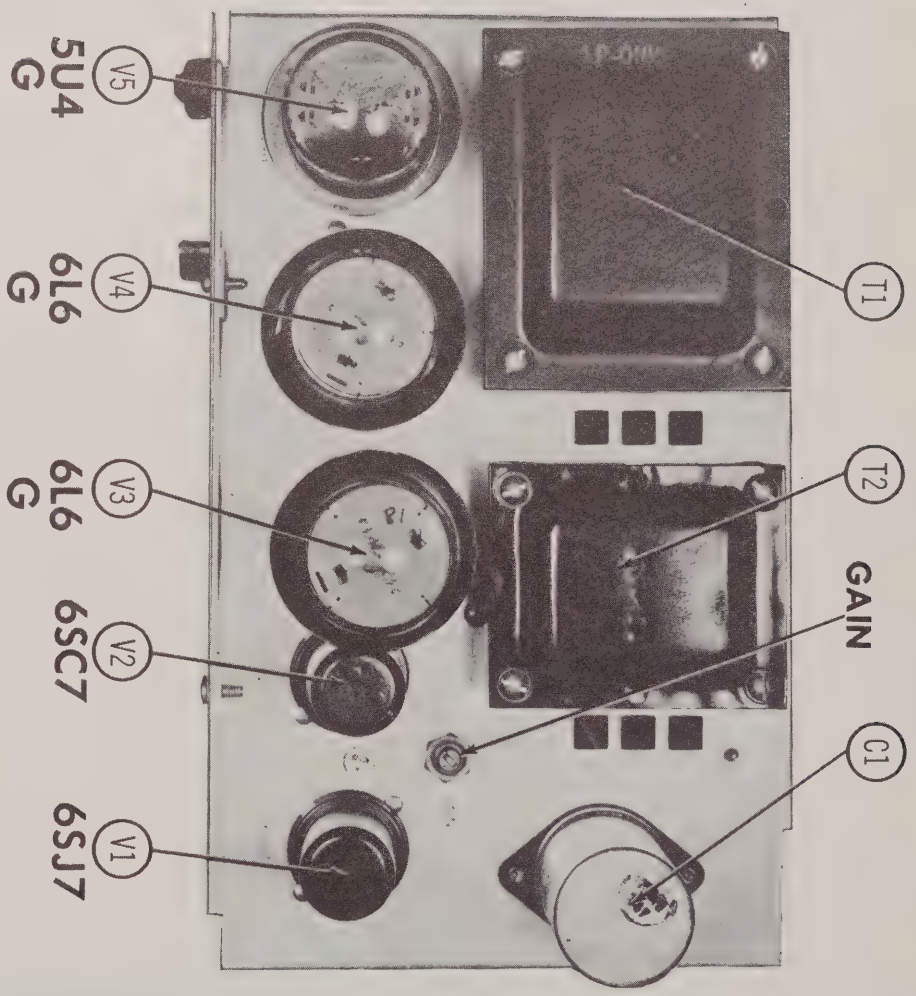
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RAULAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	RP-105W	Q13-137	AG-63-Z	AB-70	U-53	Volume
B	Shaft		Not Req.	Not req.	FKS-1/4	AK-4	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAULAND PART No.	IRC PART No.	
R2	68Ω	2			
R3	220Ω	1		BTA-220	
R4	10Ω	½		BTS-10	
R5	2.2Meg	½		BTS-2.2Meg	
R6	470KΩ	½		BTS-470K	
R7	3300Ω	½		BTS-3300	
R8	2.2Meg	½		BTS-2.2Meg	
R9	220KΩ	½		BTS-220K	
R10	10KΩ	1		BTA-10K	
R11	330KΩ	½		BTS-330K	
R12	1000Ω	1		BTA-1000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAULAND PART No.	IRC PART No.	
R13	100KΩ	½		BTS-100K	
R14	3900Ω	½		BTS-3900	
R15	100KΩ	½		BTS-100K	
R16	100KΩ	½		BTS-100K	
R17	200Ω	10		1 3/4A-200	
R18	100KΩ	½		BTS-100K	
R19	15KΩ	2		BTB-15K	
R20	4700Ω	1		BTA-4700	
R21	4.7Ω	½			
R22	4.7Ω	½			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117 VAC @ .93A	680VCT .114ADC	5VAC @ 3A	6.3VCT @ 2.9A	LP-0185	PM-8410	P-2953	PH-120B	R-14B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.9KΩ CT	500Ω tap @ 250Ω, 16Ω, 4Ω	182Ω CT	10.6Ω tap @ 7Ω, 47Ω, .28Ω	LO-0093					

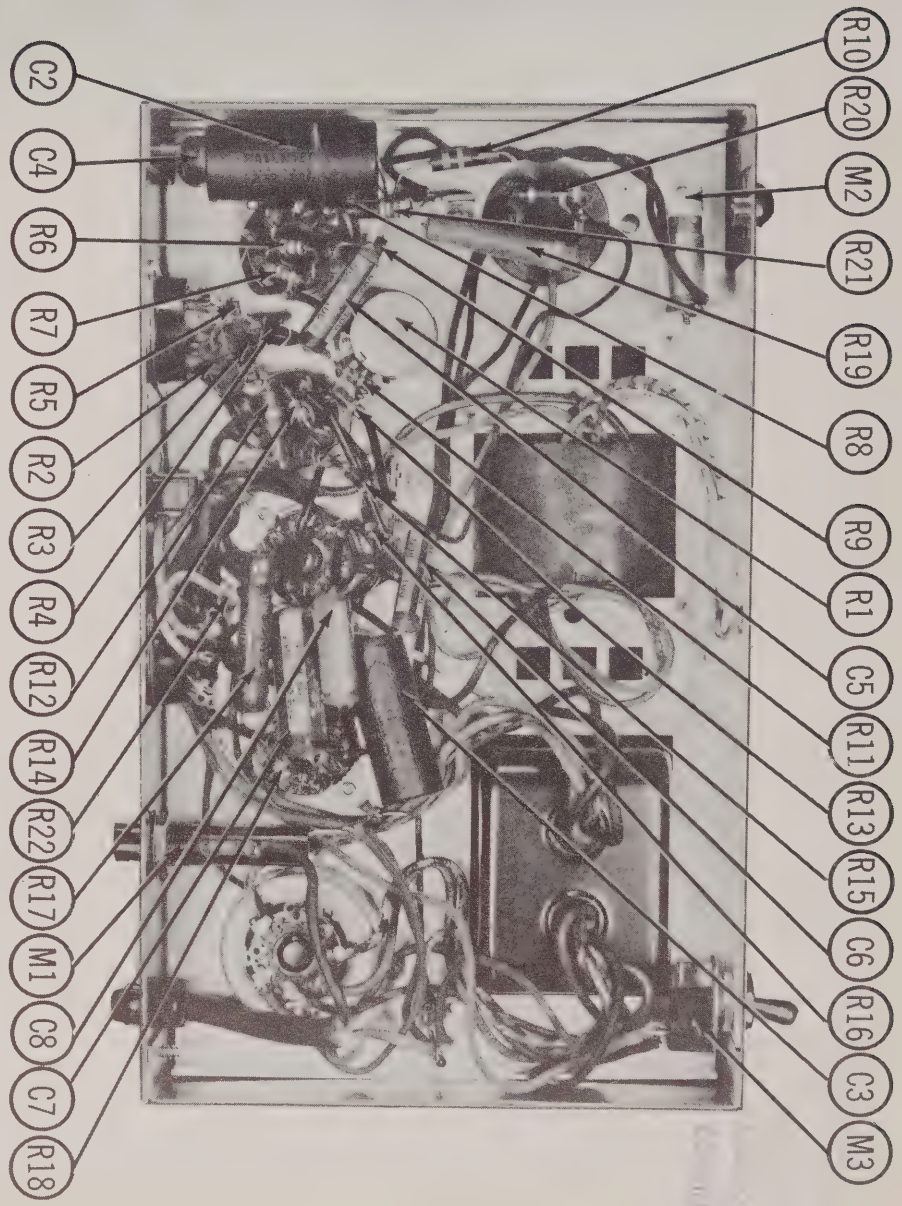
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RAULAND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A @ 250V			312003	341001	AGC 3	HKP

MISCELLANEOUS

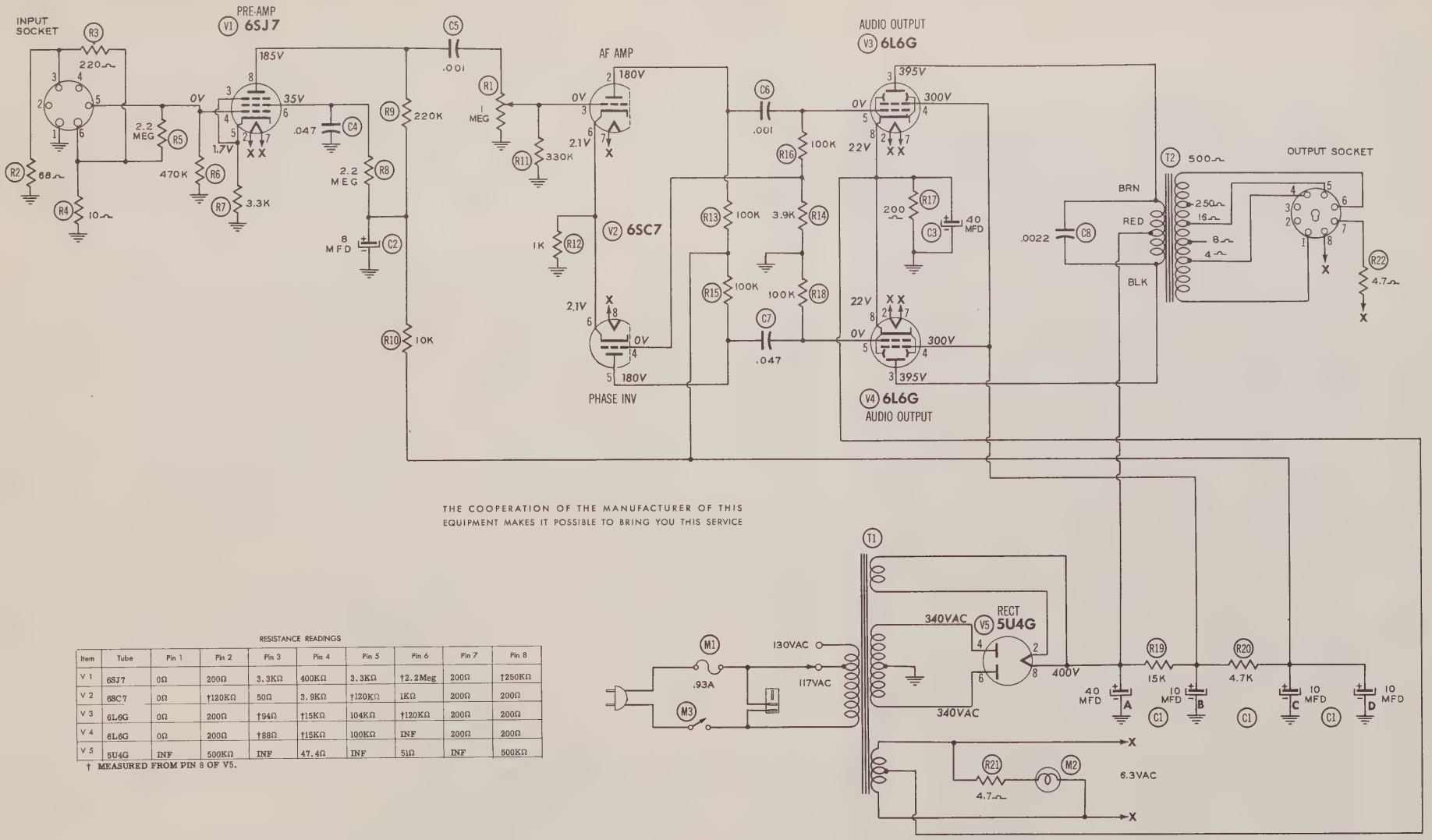
ITEM No.	PART NAME	RAULAND PART No.	NOTES
M2	Pilot Light		Type #47
M3	Switch		Off/On (SPST Toggle)

CHASSIS—BOTTOM VIEW



RAULAND MODEL BA121

RAULAND MODEL BA121



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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	200Ω	3.3KΩ	400KΩ	3.3KΩ	†2.2Meg	200Ω	†250KΩ
V 2	6SC7	0Ω	†120KΩ	50Ω	3.9KΩ	†120KΩ	1KΩ	200Ω	200Ω
V 3	6L6G	0Ω	200Ω	†94Ω	†15KΩ	104KΩ	†120KΩ	200Ω	200Ω
V 4	6L6G	0Ω	200Ω	†88Ω	†15KΩ	100KΩ	INF	200Ω	200Ω
V 5	5U4G	INF	500KΩ	INF	47.4Ω	INF	51Ω	INF	500KΩ

† MEASURED FROM PIN 8 OF V5.

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211-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage measured at 117 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

ROLAND
MODELS 8XF1, 8XF2

ROLAND
MODELS 8XF1, 8XF2

ROLAND MODEL 8XF1

TRADE NAME	Roland Models 8XF1, 8XF2		
MANUFACTURER	Roland Radio Corp., 12-30 Anderson Ave., Mt. Vernon, N.Y.		
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver with 3 Speed Automatic Record Changer		
TUBES (Seven)	6BJ6 FM RF Amp., 12AT7 FM Conv., 12BE6 AM Conv., 6BJ6 1st. IF Amp., 12AU6 2nd. FM IF Amp., 19T8 Radio Det.-AM Det.-AVC-A F Amp., 50C5 Audio Output		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING	.26 Amp. @ 117 Volts AC
TUNING RANGE -BROADCAST	540-1650 KC	FREQ. MOD.	88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950 PHOTOFACT SET 107, FOLDER 13, AND SUPPLEMENT SET 131, FOLDER 17. ALSO, SEE RECORD CHANGER MANUAL CM-3.

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"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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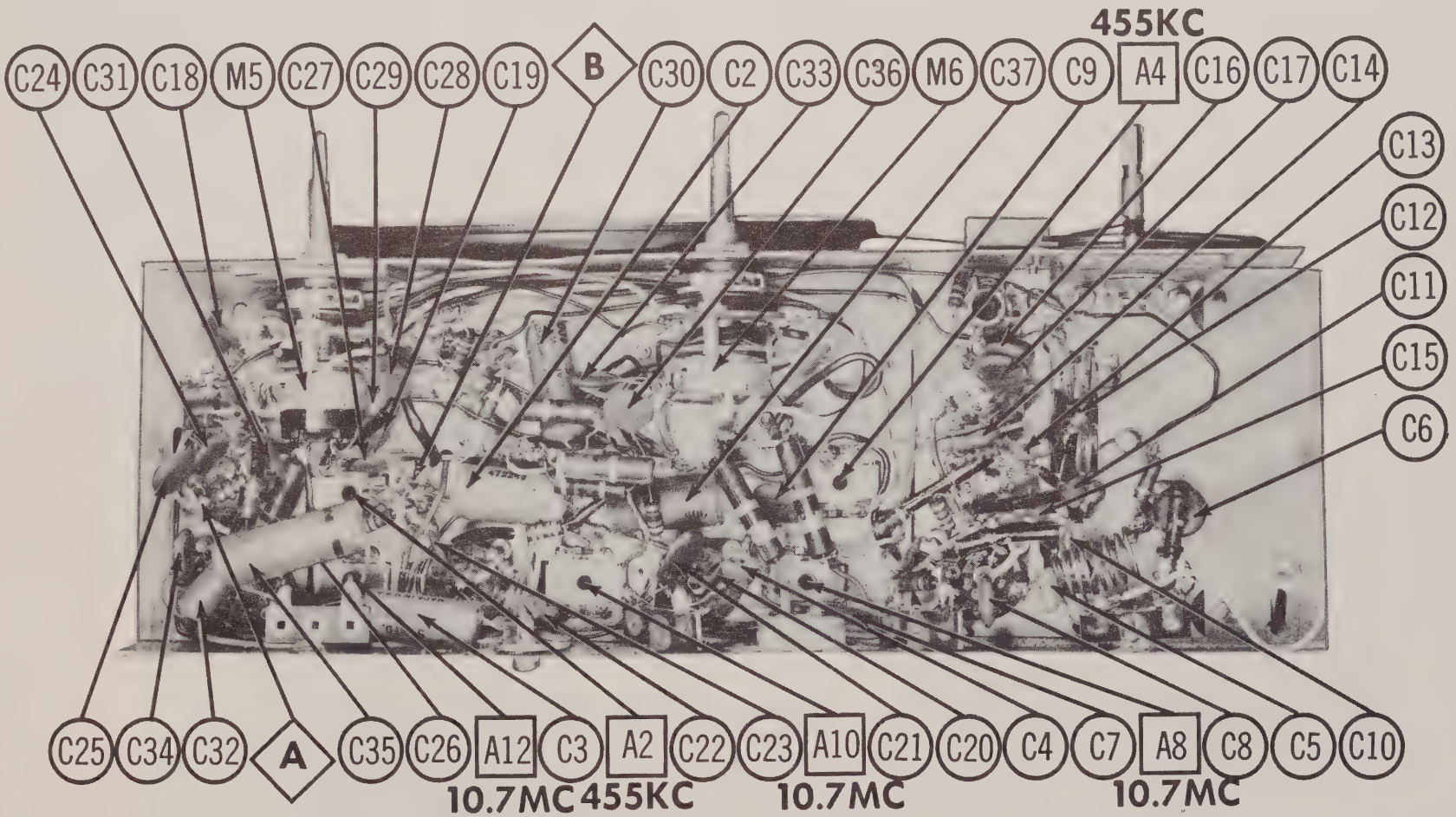
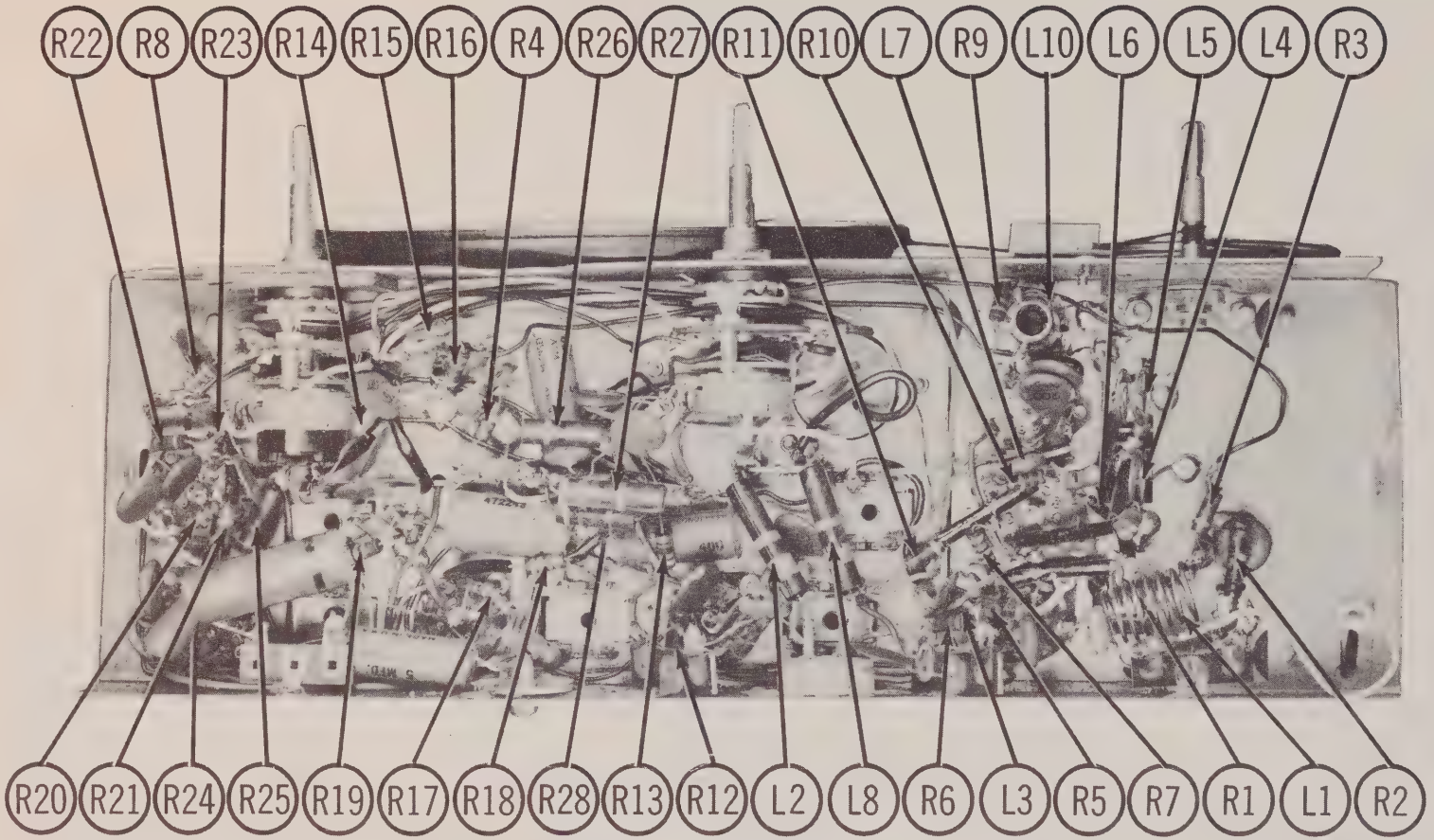


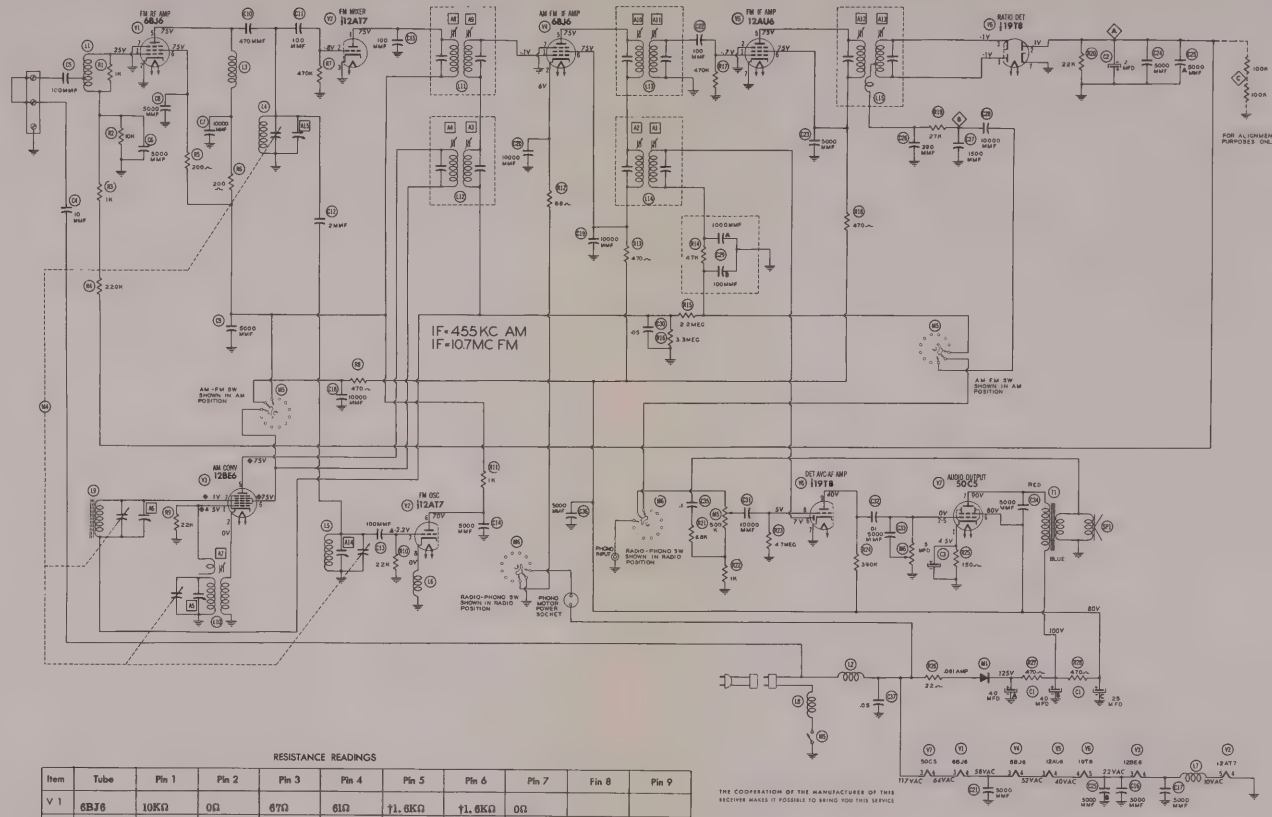
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ROLAND
MODEL SXF1

PROPERTY OF
YKENSHIP
T. ST.


IF=455 KC AM
IF=10.7MC FM
FM RF AMP 6BJ6
FM MIXER 12AT7
AM FM IF AMP 6BJ6
FM IF AMP 12AU6
RATIO DET 19T8
AM CONV 12BE6
FM OSC 12AT7
DET AVC-AF AMP 19T8
AUDIO OUTPUT 50C5
AM-FM SW SHOWN IN AM POSITION
AM FM SW SHOWN IN AM POSITION
RADIO-PHONO SW SHOWN IN RADIO POSITION
PHONO POWER SOCKET
FOR ALIGNMENT PURPOSES ONLY
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Fin 8	Pin 9
V 1	6BJ6	10KΩ	0Ω	67Ω	61Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 2	12AT7	†1.4KΩ	470KΩ	0Ω	0Ω	12Ω	†2.3KΩ	22KΩ	.4Ω	6Ω
V 3	12BE6	22KΩ	6.3Ω	24Ω	12Ω	†1.4KΩ	†1.4KΩ	3.3Meg		
V 4	6BJ6	3.3Meg	0Ω	61Ω	55Ω	†1.4KΩ	† 1.4KΩ	0Ω		
V 5	12AU6	470KΩ	0Ω	55Ω	43Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 6	19T8	INF	22KΩ	INF	43Ω	24Ω	5.9Meg	0Ω	4.7Meg	†390KΩ
V 7	50C5	150Ω	500KΩ	117Ω	67Ω	500KΩ	†940Ω	†630Ω		

ALL MEASUREMENTS TAKEN IN FM POSITION.
♦ MEASURED IN AM POSITION.
† MEASURED FROM OUTPUT OF M1.
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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21H11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Set tone control for maximum treble.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn tuning gang fully open and set pointer 1½ inches from right hand edge of dial back plate.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V3). Low side to chassis.	455KC (400~Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	"	A5	"
3.		Loop	1400KC	"	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver.
4.		"	600KC	"	Tune to 600KC signal	"	A7	Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	.1MFD	High side to pin 2 (grid) of 12AT7 (V2A) Low side to chassis.	10.7MC (Unmod.)	FM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	.1MFD	High side to pin 2 (grid) of 12AT7 (V2A) Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. Amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in Fig. 1.
6.	"	"	"	"	"	Vert. Amp. to point Ⓑ Low side to chassis.	A13	Reconnect capacitor C 2. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side to FM antenna terminal (disconnect link to center terminal). Low side to chassis.	108.5MC (Unmod.)	FM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.
8.	"	"	105MC	"	Tune to 105MC signal	"	A15	"
	The following adjustments should be made only if necessary for proper tracking or to cover the FM range.							
9.	270Ω Carbon Resistor	High side to FM antenna terminal Low side to chassis.	875MC	FM	Tuning gang fully closed	DC probe to point Ⓐ. Common to chassis.	L5	Compress or expand L5 for maximum deflection.
10.	"	"	108.5MC	"	Tuning gang fully open	"	A14	Adjust for maximum deflection.
11.	"	"	90MC	"	Tune to 90MC signal	"	L4	Compress or expand L4 for maximum deflection. while rocking tuning gang.
12.	Repeat Step 8.							

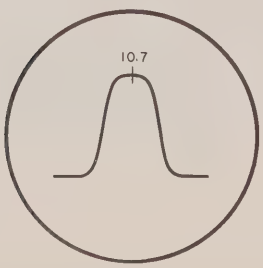


FIG. 1

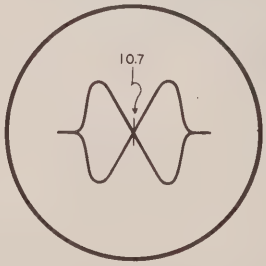


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		ROLAND PART No.	STANDARD REPLACEMENT		
V1	FM RF Amplifier	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	12BE6	12BE6	7CH	
V4	1st. FM IF Amp.	6BJ6	6BJ6	7CM	
V5	2nd. FM IF Amp.	12AU6	12AU6	7BK	
V6	Ratio Detector - AM Detector-AVC-AF Amplifier	19T8	19T8	9E	
V7	Audio Output	50C5	50C5	7CV	

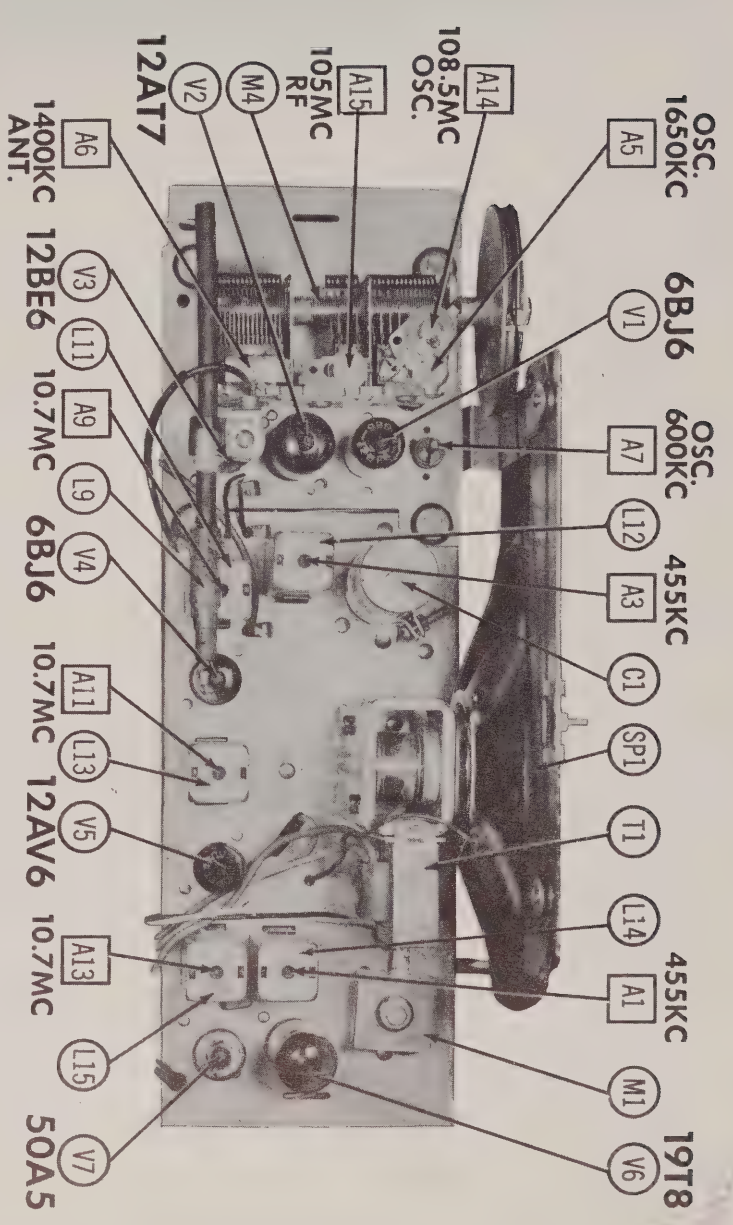
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ROLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PRS150/50-30-20		EDL44215		3N532	TVA-3448	Red
B	40	150								Blue
C	25	150								Red
C2	2	50		PRS150/4		BBR2-50T		TC302	TVA-1301	
C3	5	50		PRS150/4		BR550		TC30	TVA-1303	
C4	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C5	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C6	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C7	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C8	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C9	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C10	470			BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C11	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C12	2									
C13	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C14	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C15	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C16	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C17	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C18	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C19	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C20	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C21	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C22	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C23	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C24	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C25A	5000			BPD-2X0047	DD-3-502	TM5D5	811-005	DC-525	5HK-2D47	
B	5000					TM5D5	811-005	DC-525		
C26	390			SI390	D6-391		GP2K-391	UC-5339	5GA-T39	
C27	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C28	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C29A	100		♦	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		
C30	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C31	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C32	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C33	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C36	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	.05	400		489ZX-05		PJ4S5		PT415	4TM-S5	

♦ Items C29A, C29B, R16 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R1	1000Ω	1/2		BTS-1000	
R2	10KΩ	1/2		BTS-10K	
R3	1000Ω	1/2		BTS-1000	
R4	220KΩ	1/2		BTS-220K	
R5	200Ω	1/2			
R6	200Ω	1/2			
R7	470KΩ	1/2		BTS-470K	
R8	470Ω	1/2		BTS-470	
R9	22KΩ	1/2		BTS-22K	
R10	22KΩ	1/2		BTS-22K	
R11	1000Ω	1/2		BTS-1000	
R12	68Ω	1/2		BTS-68	
R13	470Ω	1/2		BTS-470	
R14	47KΩ	1/2	♦	BTS-47K	

♦ Items R16, C29A, C29B are combined in one unit.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R15	2.2Meg	1/2		BTS-2.2Meg	
R16	3.3Meg	1/2		BTS-3.3Meg	
R17	470KΩ	1/2		BTS-470K	
R18	470Ω	1/2		BTS-470	
R19	27KΩ	1/2		BTS-27K	
R20	22KΩ	1/2		BTS-22K	
R21	6800Ω	1/2		BTS-6800	
R22	1000Ω	1/2		BTS-1000	
R23	4.7Meg	1/2		BTS-4.7Meg	
R24	390KΩ	1/2		BTS-390	
R25	150Ω	1		BTA-150	
R26	22Ω	1			
R27	470Ω	2		BTB-470	
R28	470Ω	1		BTA-470	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ROLAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.6KΩ	3.5Ω	164Ω	.93Ω		A-3876 ①	A-2928 ①	RO-302 ①	S-1X ①	① Bend mtg. tabs down, file out slots. Mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"X6"	PM	3.5Ω		46J6	46A07	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω						Tapped
L2	Fil. Choke	6Ω					4610	5.5 Microhenries, (IRC part #CL-1)
L3	FM RF Choke	.4Ω					4612	11.2 Microhenries
L4	FM RF Coil	0Ω						
L5	FM Osc. Coil	0Ω						
L6	Cathode Choke	.4Ω					4612	11.2 Microhenries
L7	Fil. Choke	.4Ω					4612	11.2 Microhenries
L8	Fil. Choke	6Ω					4610	5.5 Microhenries
L9	AM Loop Ant.	.6Ω						
L10	AM Osc. Coil	.3Ω	6.3Ω		14-1073			
L11	1st. FM IF	.4Ω	.5Ω	IFT-51	16-3487	FM-254	1463	
L12	1st. AM IF	8.5Ω	8.5Ω	LF-55	16-6758	BC-352	12-C1	
L13	2nd. FM IF	.4Ω	.4Ω	LF-52	16-3487	FM-254	1463	
L14	2nd. AM IF	8.5Ω	8.5Ω	LF-55	16-6758	BC-353	12-C2	
L15	Ratio Det.	1.4Ω	.6ΩCT	LF-53		FM-255	1465	Tertiary Winding-.2Ω

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA ROLAND PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.061 A		NC5	5M1	1101A	6S100	100

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA ROLAND PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2		LQD-1J	"Q" Q-33			96-0	0-1 0-3	

ASTATIC AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

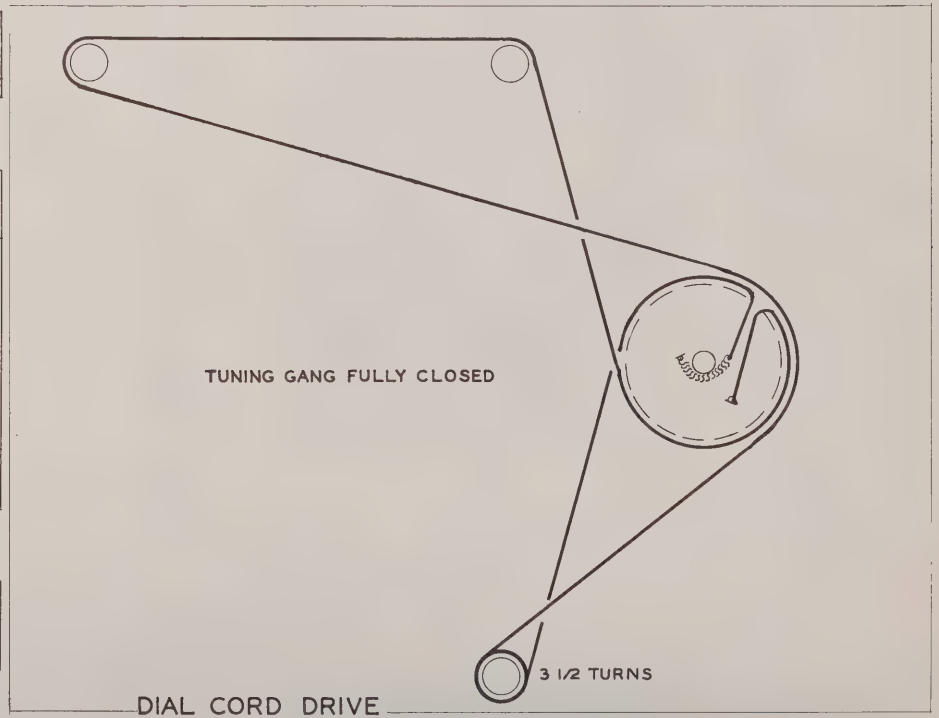
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

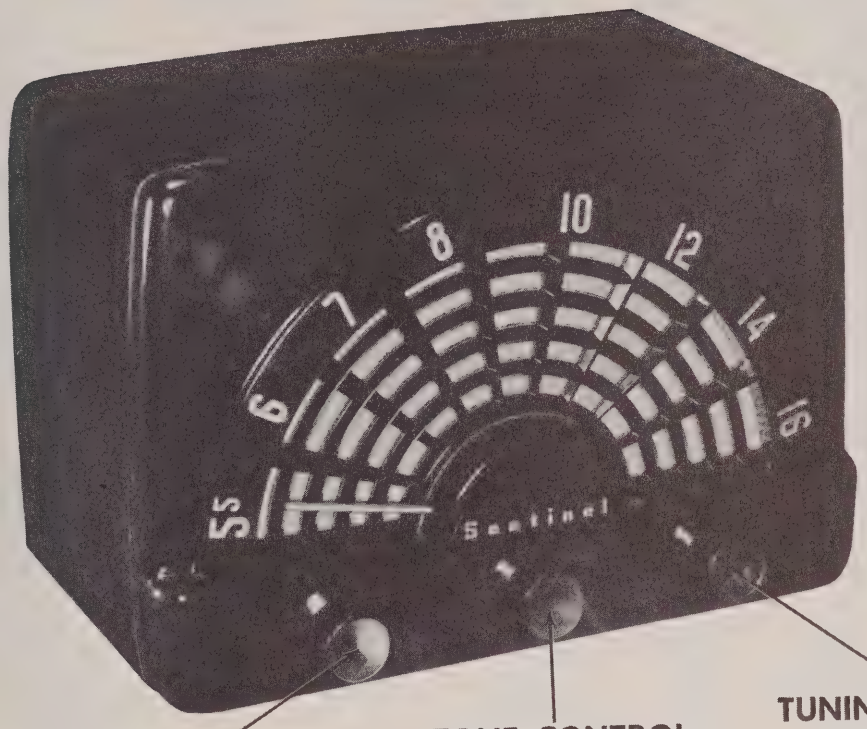
ITEM No.	REPLACEMENT DATA ROLAND PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M3		W-2A or W-2S and W-2MGA or W-2MGS	A-80 or A-81 and A-80LP or A-81LP	

MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M4	Tuning Capacitor	CV24	37-496MMF, 15-145MMF (Includes 2 gang FM capacitors).
M5	Switch		AM-FM Selector (Includes 500KΩ volume control with off-on switch)
M6	Switch		Radio-Phono Selector (Includes 500KΩ tone controls).
A14	Trimmer Capacitor		FM Osc. (2.5-13MMF)



SENTINEL
MODELS 344, IU-344



SENTINEL
MODELS 344, IU-344

TRADE NAME	Sentinel Models 344, 1U-344
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Ill.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1660 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	200MMF	High side to external antenna connection on loop. Low side to ground connection on loop.	455KC	Tuning gang fully closed.	"	A5	Adjust for MINIMUM output.
3.	"	"	1660KC	Tuning gang fully open	"	A6	Adjust for maximum output.
4.	"	"	1400KC	Tune to 1400KC signal	"	A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	25E6	PRS150/50-		EDL5515		2N521	TVA-2453	Yellow
B	50	150		50						Red
C2	250	500	23E42	1468-00025	D6-251	5W5T25	GP2K-251	MC240	1FM-325	Note 1
C3	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	.01	400	23E411	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	250		23E42							
C6A	220									
B	.005									
C	250		♦23E2041-6		♦PC-151		♦1408-02		♦103C5	
D										
E	.005									
C7	.002	600	23E405	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C8	.01	400	23E411	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C9	.05	400	23E416	P488-05		PTE4S5		PT415	4TM-S5	
C10	.1	400	23E2021-2	RC3					72P52	Notes 1, 2

Note 1. Used in Model 1U344 only.
Note 2. Replace with resonant type capacitor only
♦ Items C6A, C6B, C6C, C6D, C6E, R11A, R11B, R11C are combined in one unit. When replacing items separately C6C, and C6D should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	28E7	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	28E8	Q13-133	AG-60-Z	BSK-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

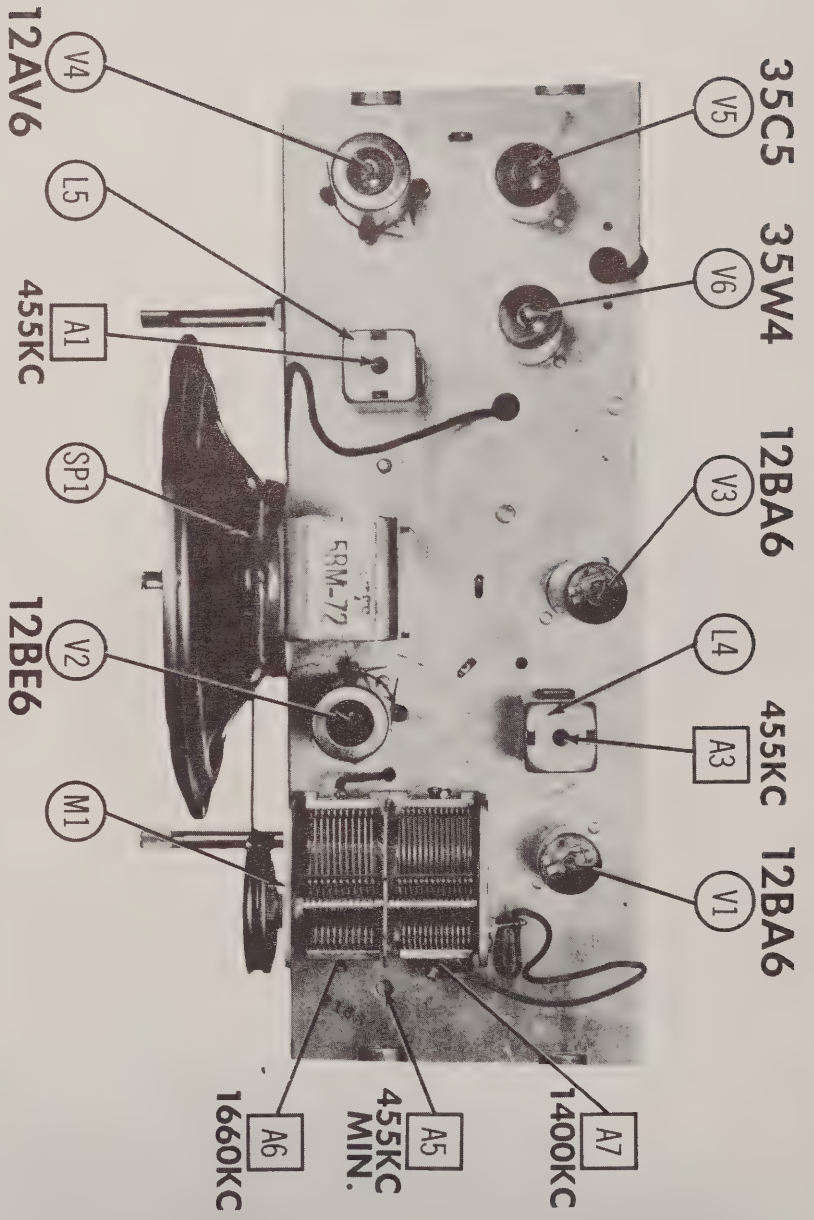
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R3	1 Meg	1/2	27E105-2	BTS-1 Meg	Note 1
R4	47KΩ	1/2	27E473-2	BTS-47K	
R5	8200Ω	1/2	27E822-2	BTS-8200	
R6	3.3Meg	1/2	27E335-2	BTS-3.3Meg	
R7	220KΩ	1/2	27E224-2	BTS-220K	
R8	22KΩ	1/2	27E223-2	BTS-22K	
R9	10Meg	1/2	27E106-2	BTS-10Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R10	1 Meg	1/2	27E105-2	BTS-1 Meg	
R11A	6.8Meg	1/2		BTS-6.8Meg	
B	470KΩ	1/2	♦23E2041-6	BTS-470K	
C	470KΩ	1/2		BTS-470K	
R12	150Ω	1/2	27E151-2	BTS-150	
R13	1000Ω	1	27E102-3	BTA-1000	
R14	56Ω	1	27E056-3		Note 2

Note 1. Used only in model IU-334.
Note 2. Some models may use a 47Ω resistor in this application.
♦ Items R11A, R11B, R11C, C6A, C6B, C6C, C6D, C6E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	3.9KΩ	3.3Ω	227Ω	.4Ω	22E8	A-3856 ①	A-2900 ①	RO-301①	S-51X ①	① Drill one new mounting hole.

SPEAKER

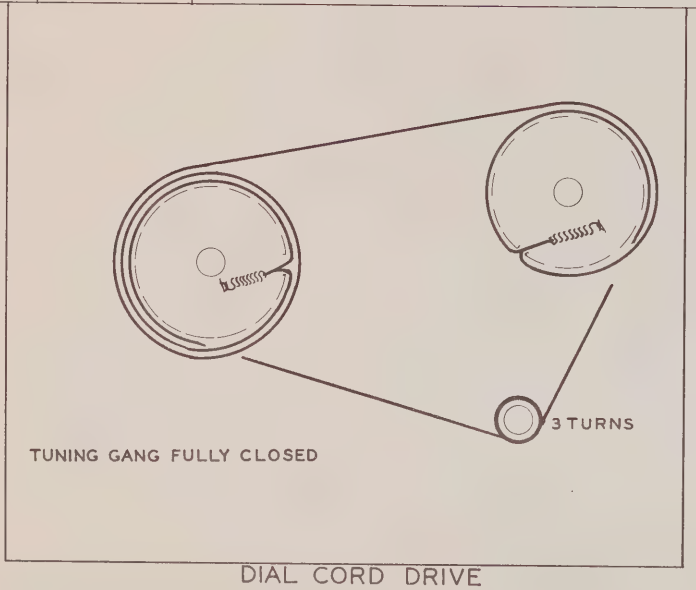
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	1E52	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.1Ω	2Ω	7E323				Includes cabinet back
L2	IF Trap	50Ω		2E19			1055	
L3	Osc. Coil	.9Ω	8.5Ω	20E733	14-1073			
L4	Input IF	14.5Ω	14.5Ω	20E732	16-6758	BC-352	12-C1	
L5	Output IF	10Ω	9.5Ω	20E763	16-6758	BC-353	12-C2	

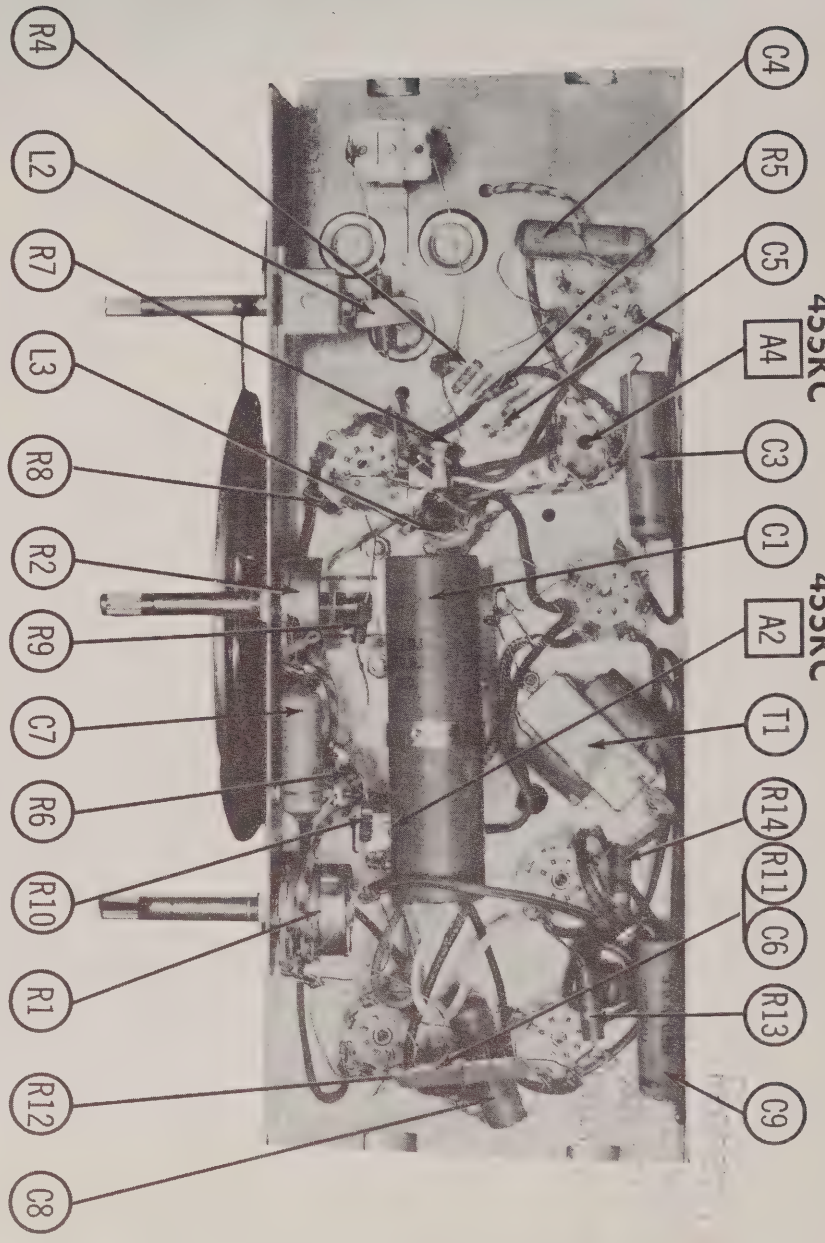
MISCELLANEOUS

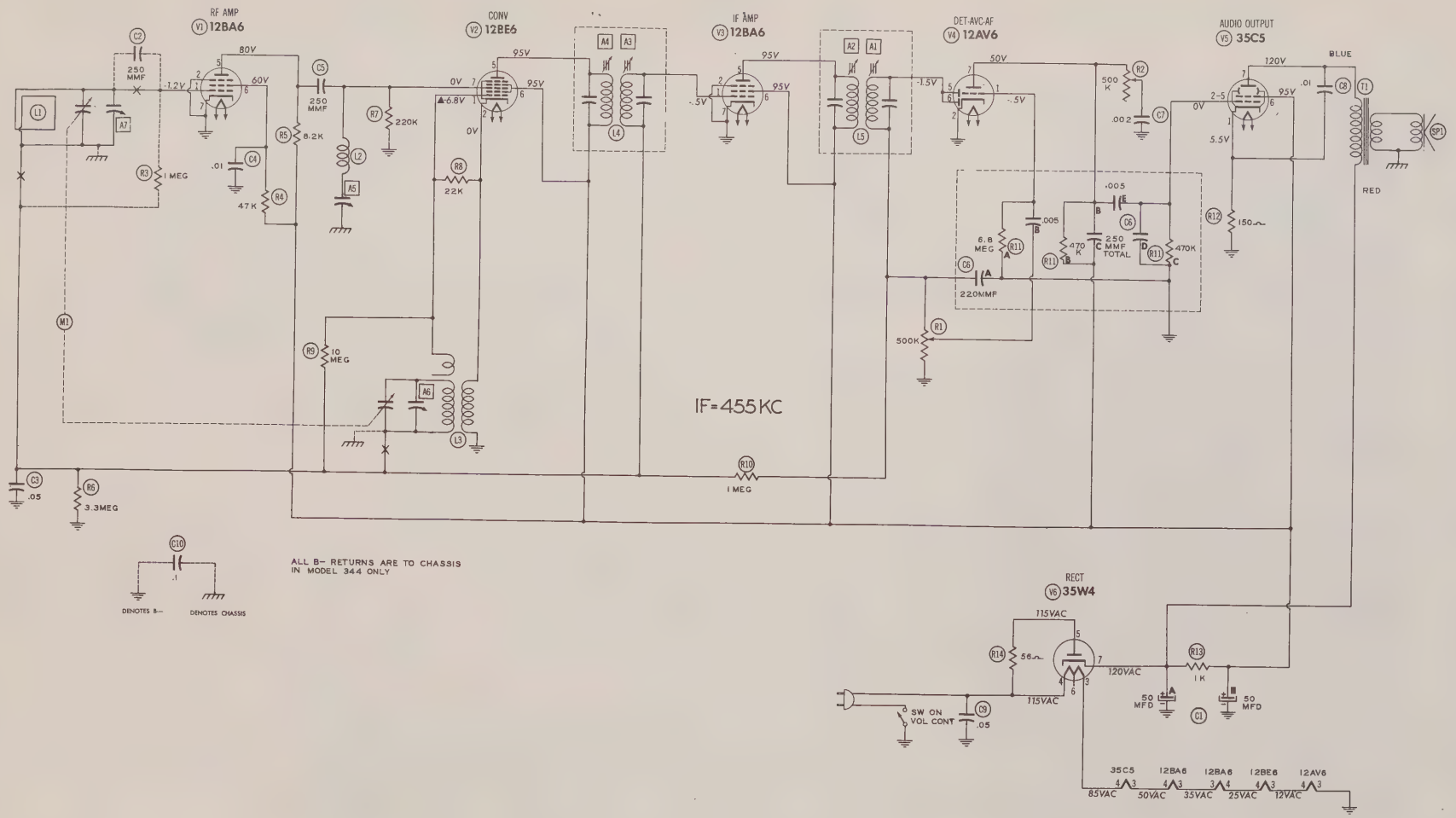
ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M1	Tuning Capacitor	24E60	35-442MMF, 24-155MMF
	Cabinet	7E321-2	Walnut
	Cabinet	7E321-3	Ivory
	Knob	37E77	Walnut
	Knob	37E77-2	Ivory
	Pointer	35E34	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	900KΩ	0Ω	36Ω	24Ω	†9.2KΩ	†48KΩ	0Ω
V 2	12BE6	22KΩ	8.5Ω	12Ω	24Ω	†1KΩ	†1KΩ	.220KΩ
V 3	12BA6	1.5Meg	0Ω	36Ω	48Ω	†1KΩ	†1KΩ	0Ω
V 4	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†470KΩ
V 5	35C5	150Ω	470KΩ	48Ω	83Ω	470KΩ	†1KΩ	†227Ω
V 6	35W4	INF	INF	83Ω	117Ω	173Ω	110Ω	1 Meg

† MEASURED FROM PIN 7 OF V6.
▲ MEASURED WITH VACUUM TUBE VOLTMETER

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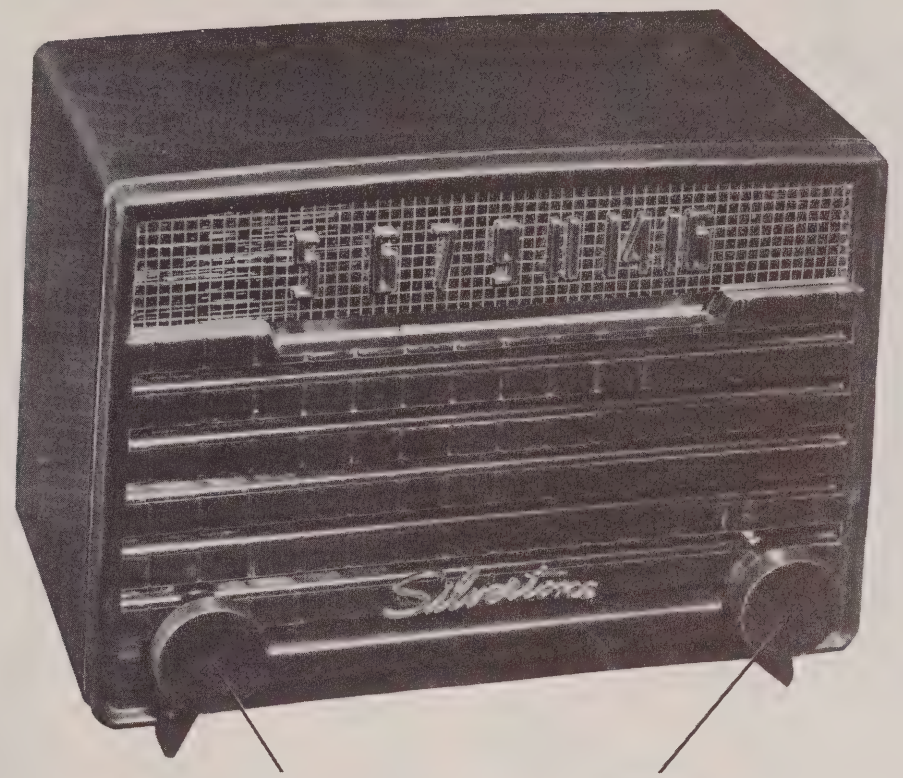
211-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODELS 2003, 4, 5, 6 (Ch. 757.110)



SILVERTONE MODEL 2003

TRADE NAME	Silvertone Models 2003, 2004, 2005, 2006 (Ch. 757.110)
SUPPLIER	Sears, Roebuck & Co., 925 So. Homan, Chicago, Ill.
TYPE SET	AC/DC Operated Superheterodyne Receiver
TUBES (Five)	12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50L6GT Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer turn tuning gang fully closed and set left hand edge of pointer to coincide with last calibration mark at left hand edge of dial back plate.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	50MMF	High side to external antenna connection. Low side to B-.	1640KC	"	"	A5	"
3.	"	"	1400KC	"	"	A6	Adjust for maximum output. Check tracking at 1000KC and 600KC calibration marks on dial back plate. If necessary slightly bend outer rotor plates of antenna section of tuning gang for best tracking.

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PARTS LIST AND DESCRIPTIONS

SILVERTONE
MODEL 2003 (Ch.757,100)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
B	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	E325	PRS150/50-30		EDL5315		2N520	TVA-2450	Red
B	30	150								Green
C2	.05	400	E306	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3A	220		♦E3015		♦PC-150		♦1408-01		♦103C4	
B	.002									
C	.005									
D	250									
E										
C4	.01	600	E301	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C5	.047	400	E342	489ZX-05		PJ4S47		PT4147	4TM-S47	
C6	.05	400	E306	P488-05		PTE4S5		PT415	4TM-S5	

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, R5C are combined in one unit.
When replacing items separately C3D and C3E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	E254	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	Note
R3	220Ω	½		BTS-220	
R4	3.3Meg	½		BTS-3.3Meg	
R5A	6.8Meg	½	♦E3015	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	

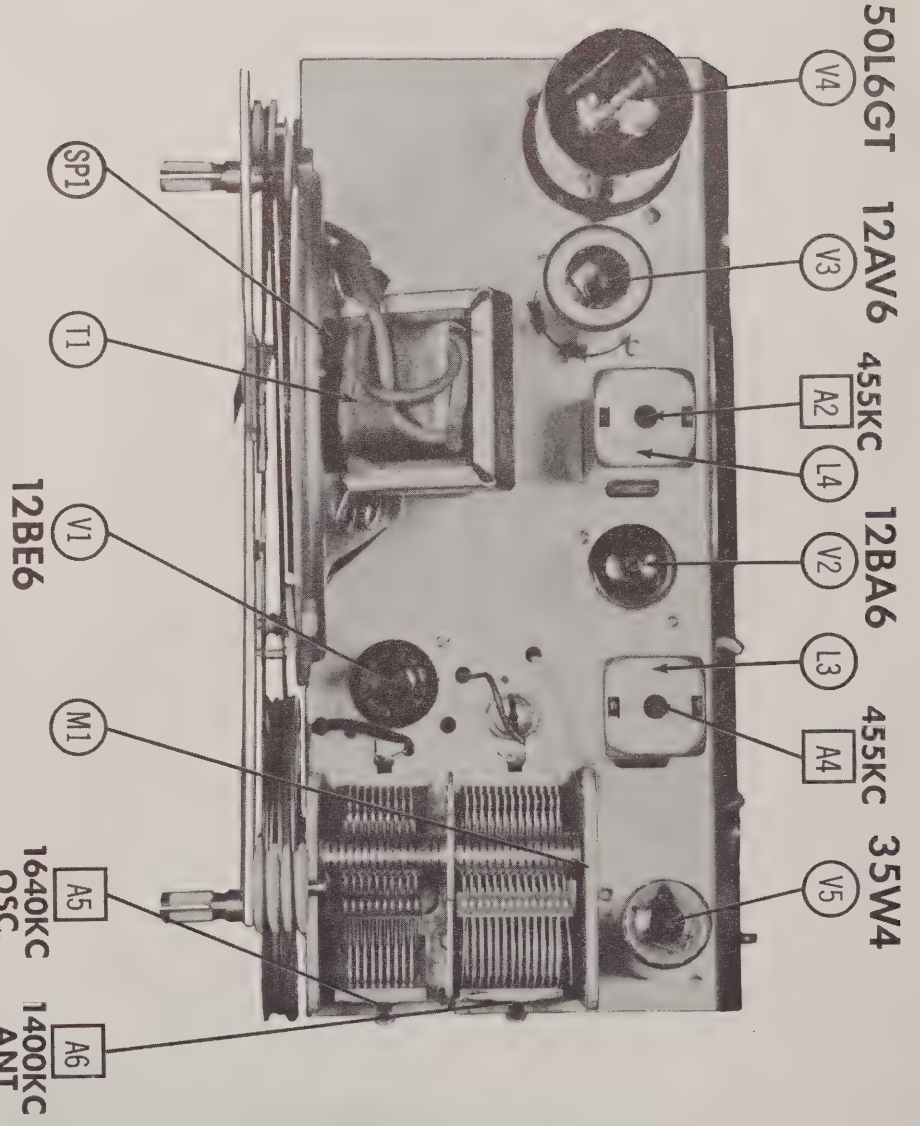
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R6	150Ω	½		BTS-150	
R7	1500Ω	1		BTA-1500	
R8	22Ω	1½			

♦Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.
Note . Some models may use a 150Ω resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.4KΩ	3.2Ω	220Ω	.55Ω	Part of spkr.	A-3332	A-3025	RO-2 ①	S-2X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

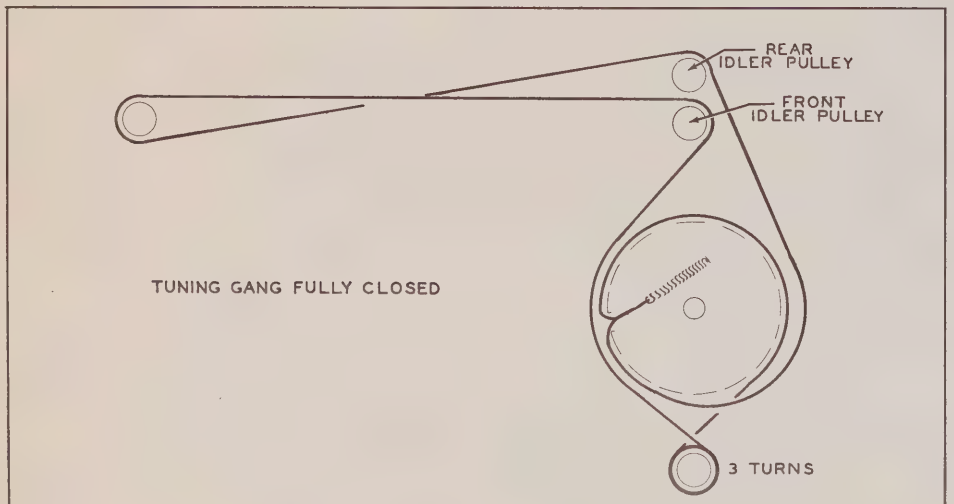
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Silvertone PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	E-103X	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	0Ω	3Ω	E602				Includes cabinet back
L2	Osc.Coil	.5Ω	5.7Ω	E616	14-1073			
L3	Input IF	17Ω	17.5Ω	E622	16-6758	BC-352	12-C1	
L4	Output IF	17Ω	17.5Ω	E622	16-6758	BC-353	12-C2	

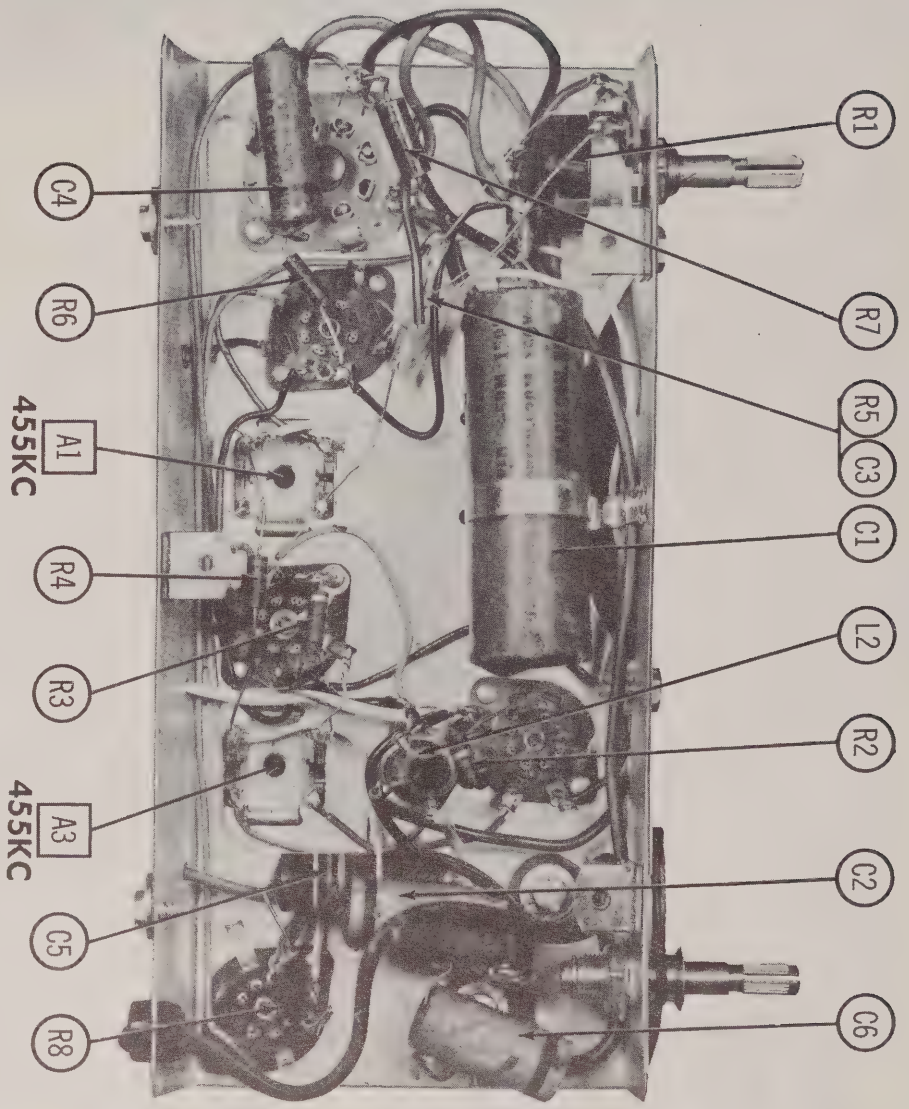
MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M1	Tuning Capacitor	E353	30-437, 29-190MMF
	Cabinet Assy.	E703	Includes gold dial background, Silvertone name plate (Brown)
	Cabinet Assy.	E704	Includes gold dial background, Silvertone name plate (Ivory)
	Cabinet Assy.	E705	Includes gold dial background, Silvertone name plate (Red)
	Cabinet Assy.	E706	Includes gold dial background, Silvertone name plate (Green)
	Back Cover	E602	Includes Loop Antenna
	Knob	E505B	Brown
	Knob	E5051	Ivory
	Knob	E505R	Red
	Knob	E505G	Green
	Pointer	E451	
	Gold Dial Background	E711	



DIAL CORD DRIVE

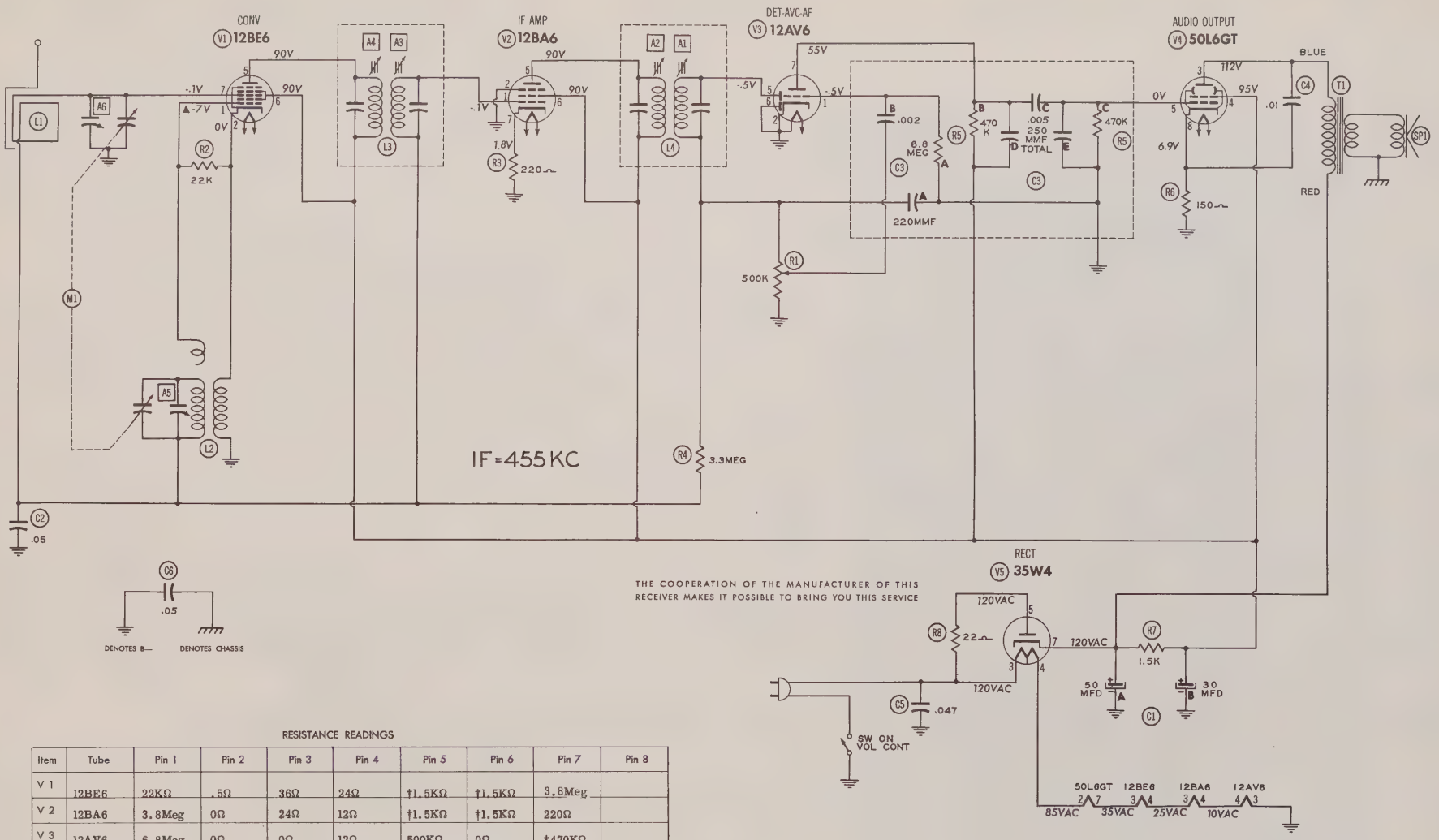
CHASSIS—BOTTOM VIEW



SET 211 FOLDER 13

SILVERTONE MODEL 2003 (Ch. 757.100)

SILVERTONE MODEL 2003 (Ch. 757.100)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	22KΩ	.5Ω	36Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8Meg	
V 2	12BA6	3.8Meg	0Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	220Ω	
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	0Ω	†470KΩ	
V 4	50L6GT	INF	86Ω	†220Ω	†1.5KΩ	470KΩ	†0Ω	36Ω	150Ω
V 5	35W4	INF	INF	117Ω	86Ω	140Ω	95Ω	40KΩ	

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V5.

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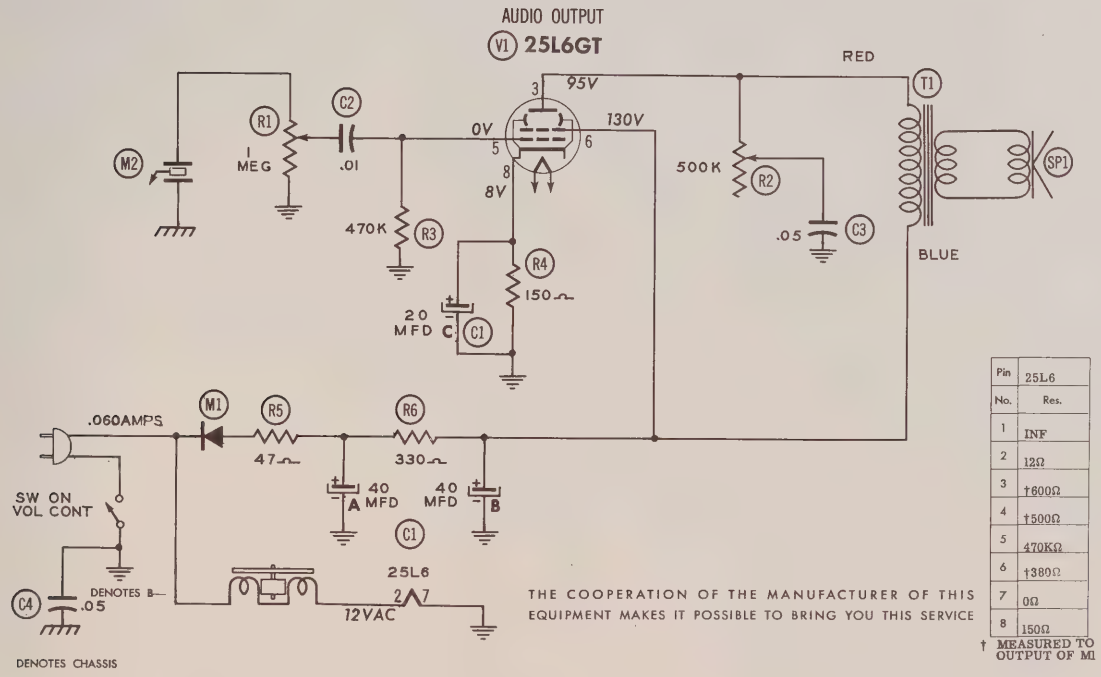
211-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

STEELMAN
MODEL 3D2

STEELMAN
MODEL 3D2

TRADE NAME	Steelman Model 3D2
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Phonograph Audio Amplifier
TUBES (One)	Type 25L6GT Audio Amplifier with 3 Speed Manual Record Player
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .37 Amp. @ 117 Volts AC



Pin No.	25L6 Res.
1	INF
2	12Ω
3	†600Ω
4	†500Ω
5	470KΩ
6	†380Ω
7	0Ω
8	150Ω

† MEASURED TO OUTPUT OF M1

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Audio Amplifier	25L6GT	25L6GT	7S	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PRS150/50-30-20		EDL44215		3N532	TVA-3430	Red
B	40	150								Blue
C	20	150								Yellow
C2	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C3	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEELMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	VC-42	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	220072G8	Q13-133	AG-60-Z	B-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	470KΩ	½		BTS-470K	
R4	150Ω	1		BTA-150	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R5	47Ω	1			
R6	330Ω	1		BTA-330	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: STEELMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.2KΩ	3.4Ω	148Ω	.4Ω		A-3332 ①	A-3025 ①	RO-2 ①	S-1X ①	①Bend mtg. holes down, file out slots. Mount on original mtg. bracket.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: STEELMAN PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.4Ω		ST-113 Mod. P4-X	4A07	

SELENIUM RECTIFIER

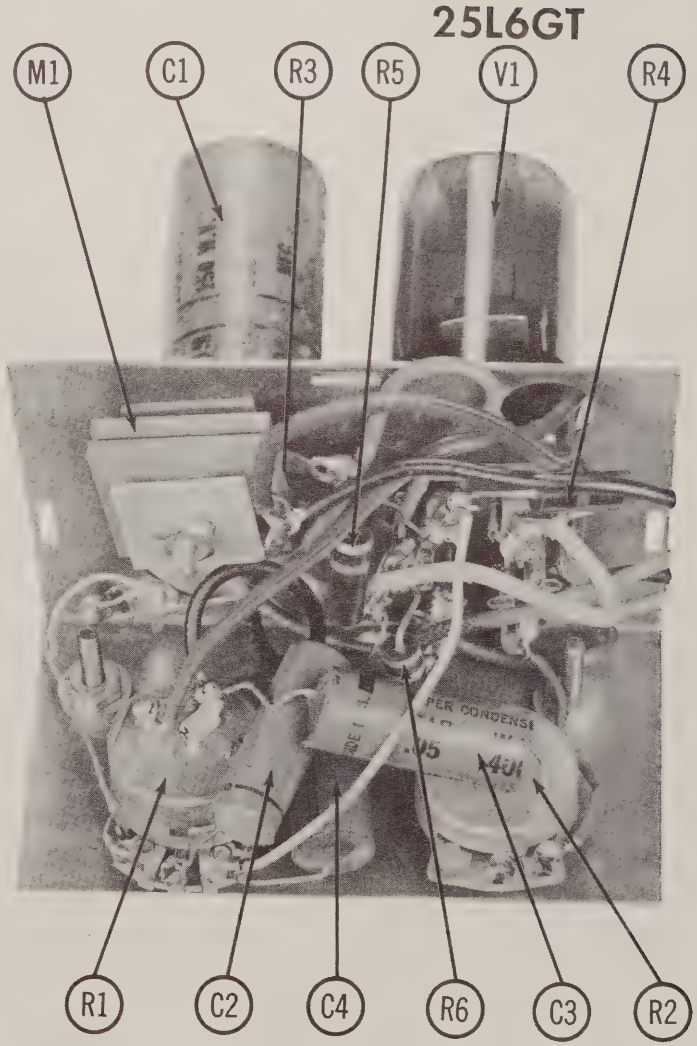
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: STEELMAN PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.060A		NA5	8J1	1002A	6S65	65

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2		14L3-DM	"R" R-78			66	0-1 or 0-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M3		W-25MGA & W-25	A-70LP & A-70	

PHOTOFACT* Folder

RTMA MEMBER RADIO TELEVISION MANUFACTURERS ASSOCIATION

STEWART WARNER
MODEL 27C-9212A Series ABC

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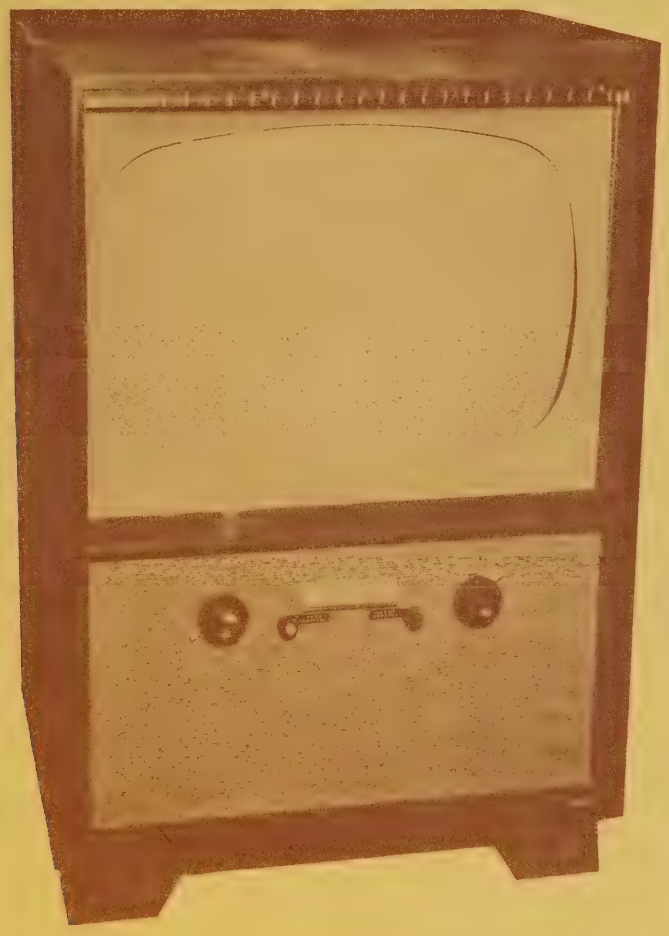

MODEL 27C-9212A

STEWART WARNER
MODEL 27C-9212A Series ABC

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STEWART WARNER
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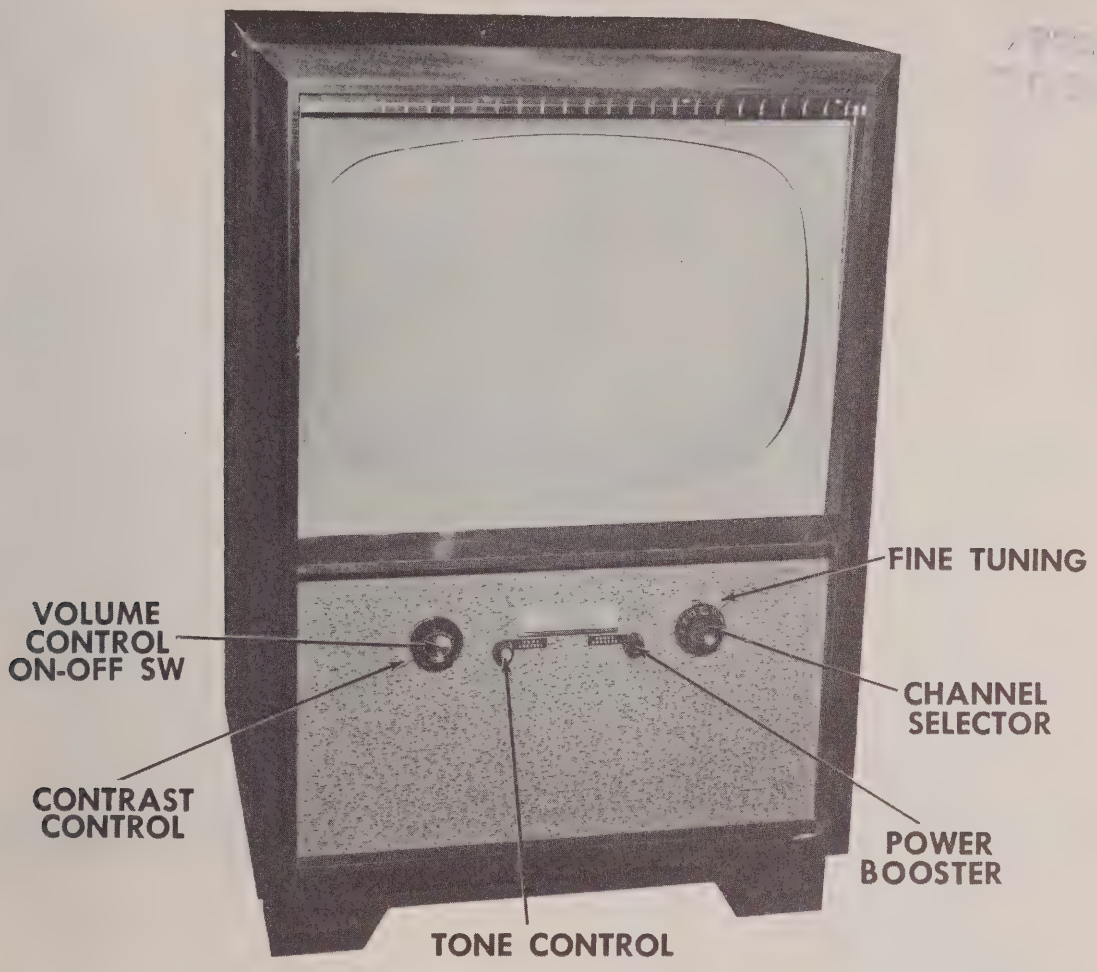

STEWART WARNER
MODEL 27C-9212A Series ABC

TRADE NAME	Stewart-Warner Model 27C-9212A Series A, B, C
MANUFACTURER	Stewart-Warner Electric, Div. of Stewart-Warner Corp., 1300 N. Kostner Ave., Chicago, 5, Ill.
TYPE SET	Television Receiver
TUBES	Twenty-one

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 2.5 Amp @ 117 Volts AC
TUNING RANGE-Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier)

INDEX

Alignment Instructions 6,7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 14, 15, 16
Photographs
- Cabinet-Rear View 11
- Capacitor Identification 4, 9
- Chassis-Top View 3
- RF Tuner 10
- Resistor Identification 19, 20
- Trans., Inductor and Alignment Identification 13

Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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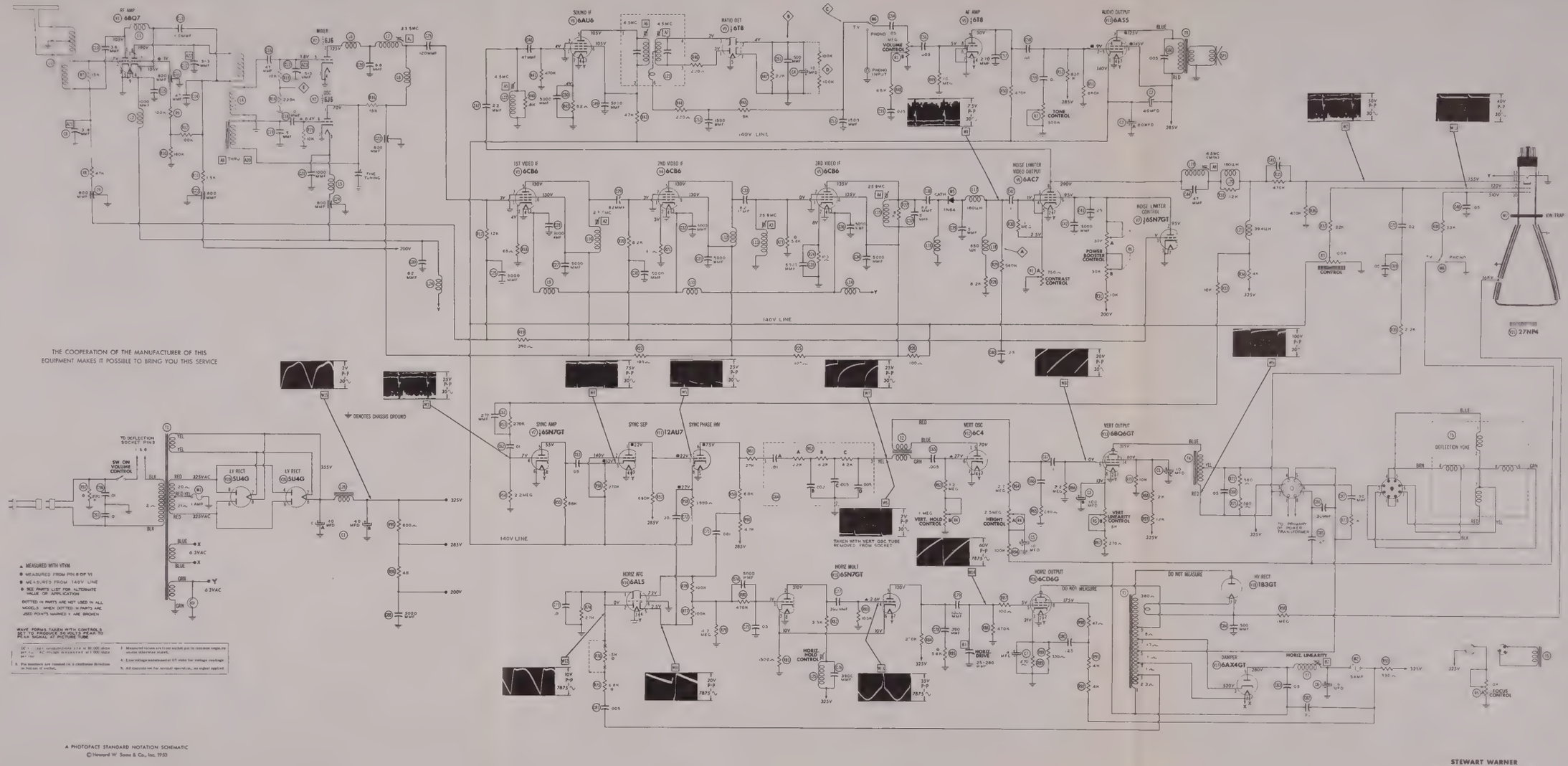
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
140V LINE
200V
325V
285V
200V
SW ON VOLUME CONTROL
TO DEFLECTION SOCKET PINS 1 & 6
6.3VAC
6.3VAC
RF AMP V1 6BQ7
MIXER V2 6J6
OSC V3 6J6
23.5MC
FINE TUNING
SOUND IF V5 6AU6
4.5MC
RATIO DET V6 6T8
VOLUME CONTROL
PHONO INPUT
AF AMP V8 6T8
AUDIO OUTPUT V10 6AS5
TONE CONTROL
1ST VIDEO IF V11 6CB6
2ND VIDEO IF V14 6CB6
3RD VIDEO IF V15 6CB6
25.9MC
NOISE LIMITER VIDEO OUTPUT V16 6AC7
NOISE LIMITER CONTROL V17 6SN7GT
CONTRAST CONTROL
POWER BOOSTER CONTROL
4.5MC (MIN.)
BRIGHTNESS CONTROL
ION TRAP
PHONO
CRT V21 27NP4
SYNC AMP V7 6SN7GT
SYNC SEP V11 12AU7
SYNC PHASE INV
VERT OSC V12 6C4
VERT OUTPUT V13 6BQ6GT
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT LINEARITY CONTROL
DEFLECTION YOKE
TO PRIMARY OF POWER TRANSFORMER
TAKEN WITH VERT. OSC. TUBE REMOVED FROM SOCKET
HORIZ AFC V14 6AL5
HORIZ MULT V15 6SN7GT
HORIZ OUTPUT V16 6CD6G
DO NOT MEASURE
HV RECT V18 1B3GT
DAMPER V17 6AX4GT
HORIZ. LINEARITY
HORIZ. HOLD CONTROL
HORIZ. DRIVE
FOCUS CONTROL
LV RECT V19 5U4G
LV RECT V20 5U4G
▲ MEASURED WITH VTVM
● MEASURED FROM PIN 6 OF V1
■ MEASURED FROM 140V LINE
◆ SEE PARTS LIST FOR ALTERNATE VALUE OF APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS NAMED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltages measured with a 20,000 ohms per volt DC voltage sensitivity or 1,000 ohms per volt.
2. No resistors are counted in a clockwise direction from terminal marked.
3. Measured values are from socket pin to common negative source unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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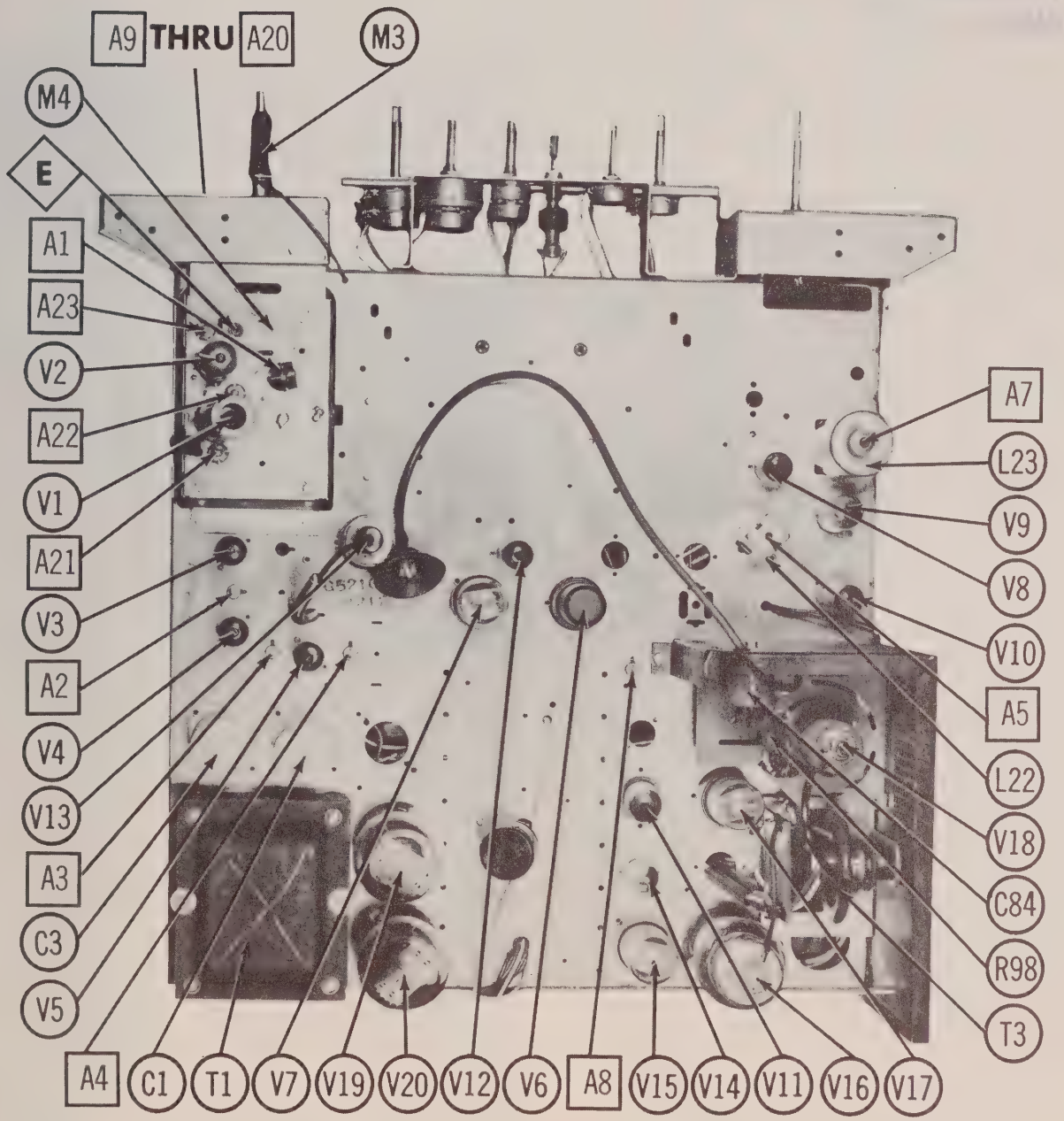
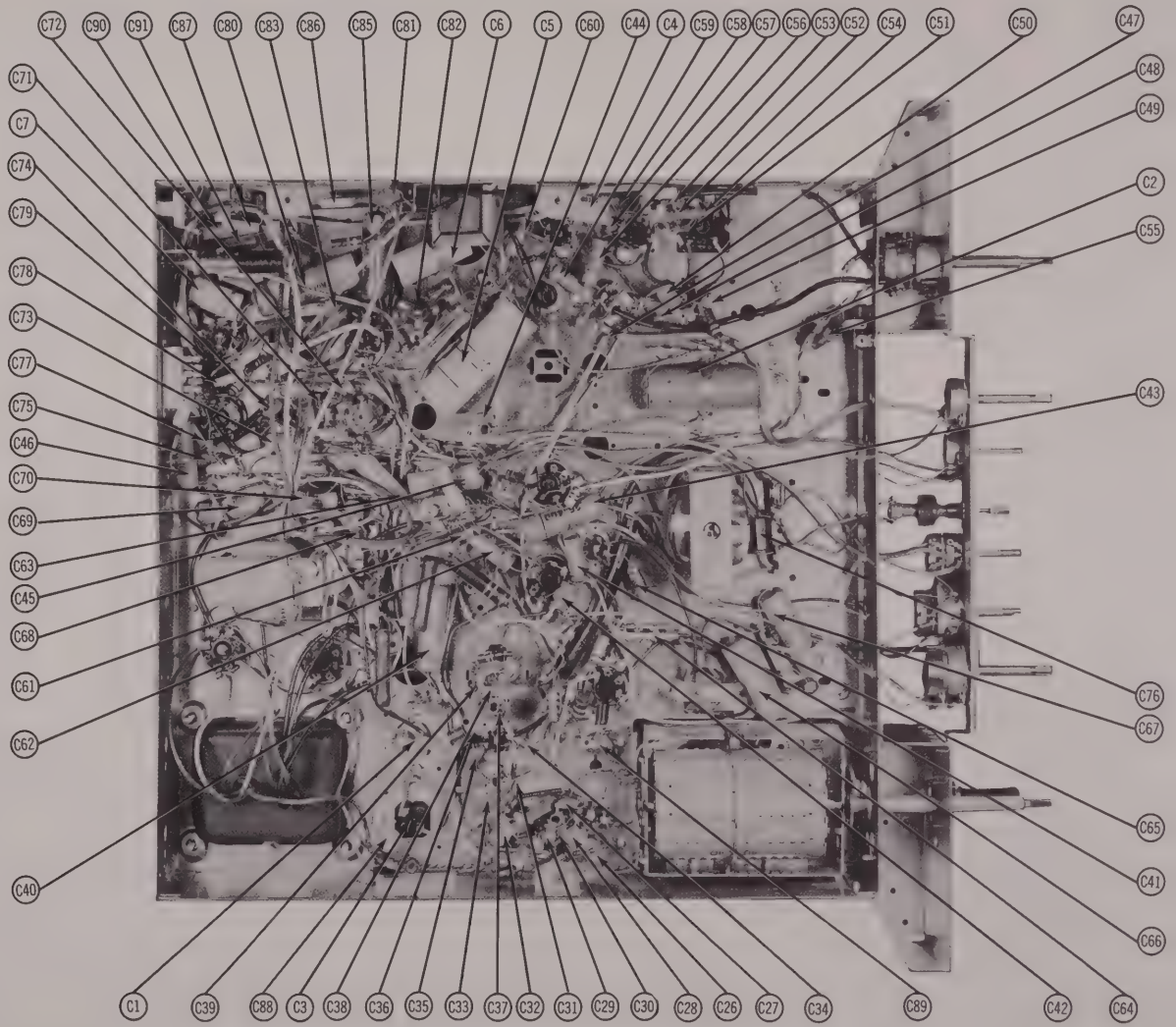
STEWART WARNER
MODEL 27C-9212A Series ABC

STEWART WARNER
MODEL 27C-9212A Series ABC

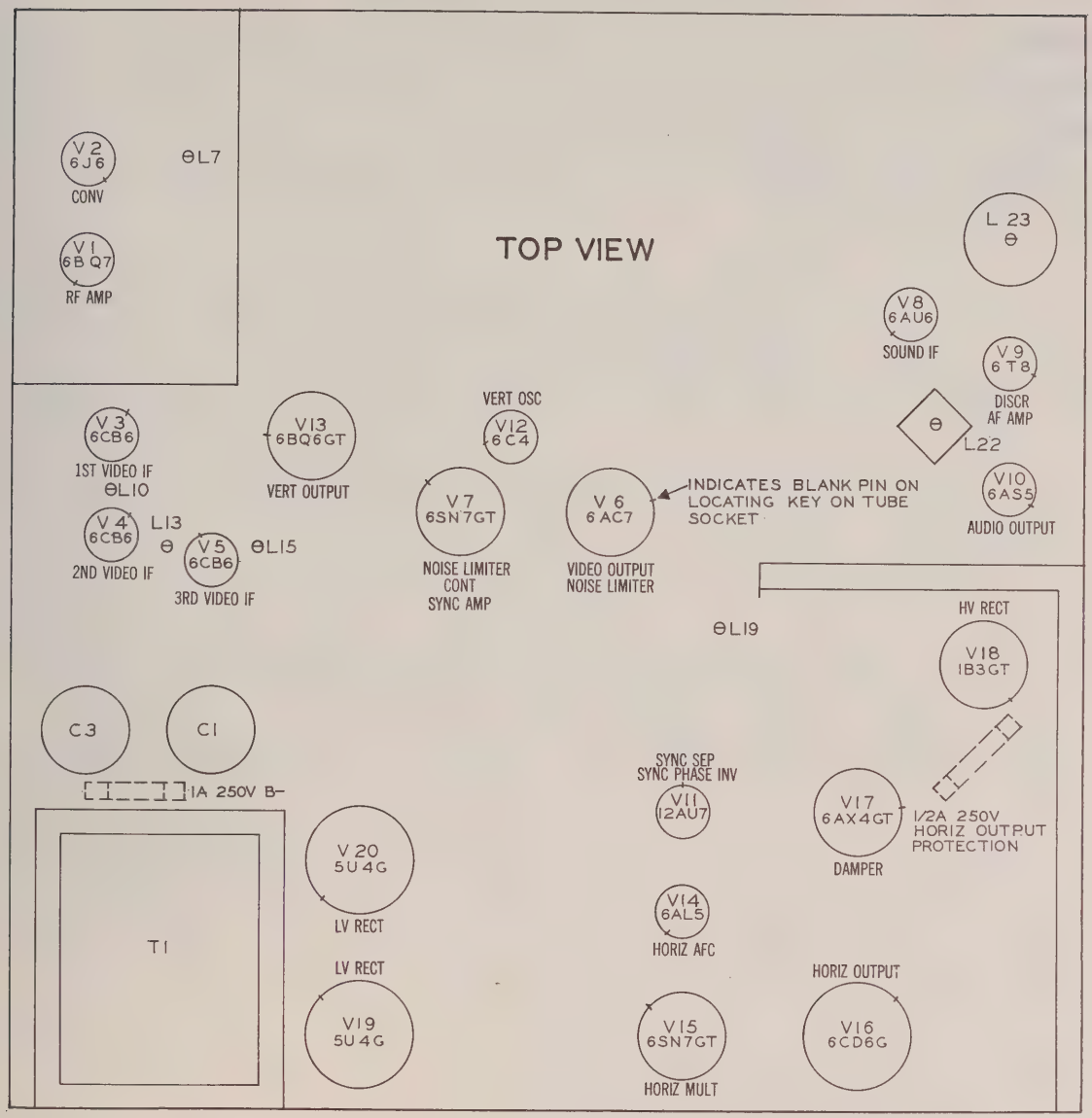


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19, V20 Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V21
Has pic, no sound -V8, V9, V10

SYNC FAILURE
No vert. sync -V11, V12
No horiz. sync -V11, V14, V15
No vert. or horiz. sync - V7, V11

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V21 Fuse (M2)
No vertical deflection -V12, V13
Poor vert. linearity or foldover - V12, V13
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19, V20
Vert. off freq. -V11, V12
Horiz. off freq. - V11, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C40. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	23.5MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	25.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	22.25MC 26.75MC	Any	Vert. amp to point (A) Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistor is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (C) Common to point (D)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point (B) Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
5.	"	"	"	"	"	Vert. amp to point (C) Low side to chassis.	A7	Reconnect capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 4) to pin 11 of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A9	Adjust to place sound marker as shown in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point (E) Low side to chassis.	A21, A22, A23	Adjust for response curve similar to Fig. 6.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make slight compromise adjustment of A21, A22, and A23 with channel switch turned to that channel. Recheck all tother channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

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F. BLANKENSHIP
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[illegible] COLORADO

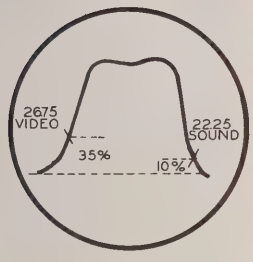


FIG.1

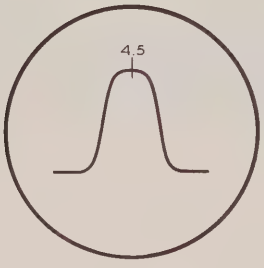


FIG. 2

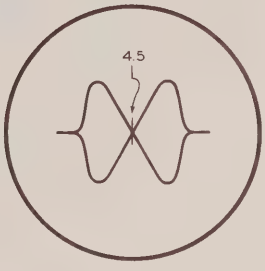


FIG. 3

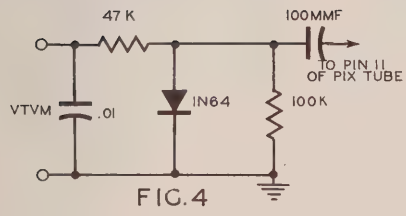


FIG.4

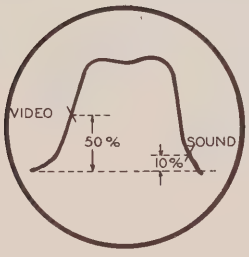


FIG.5

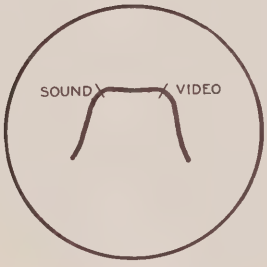
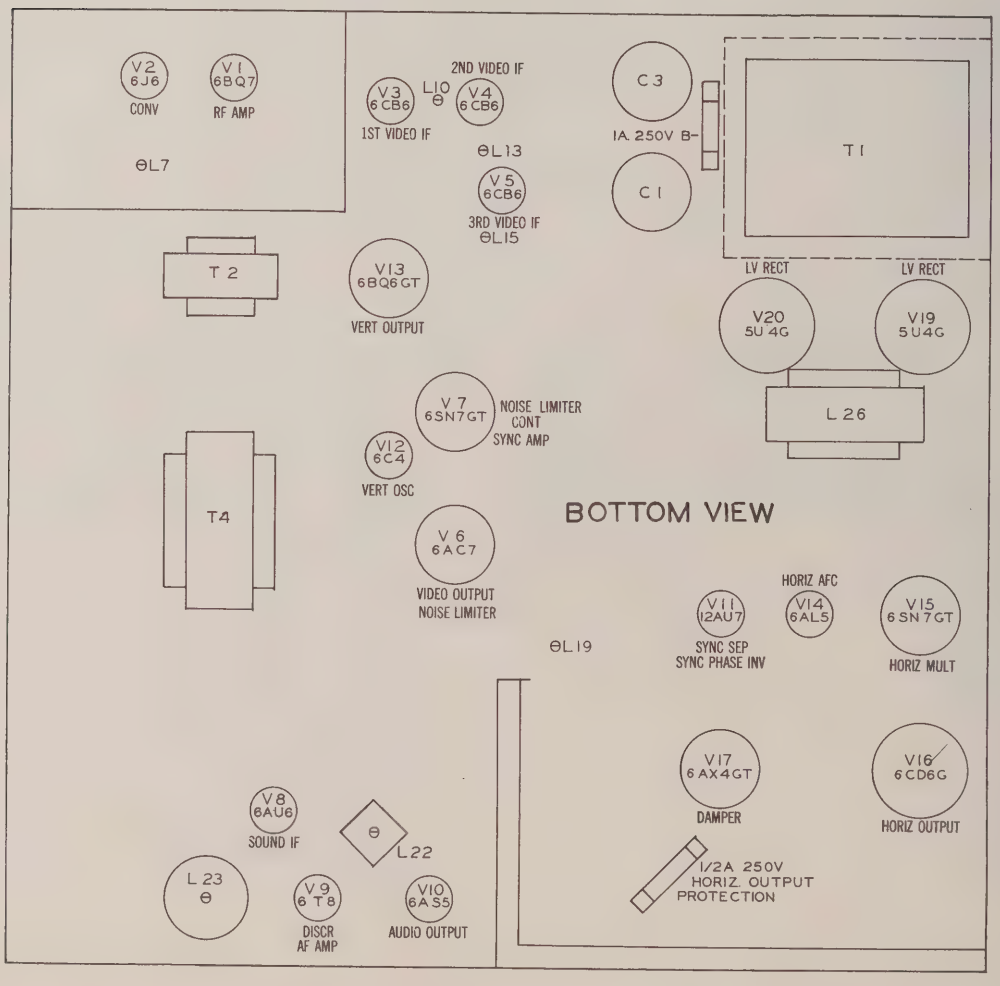


FIG. 6

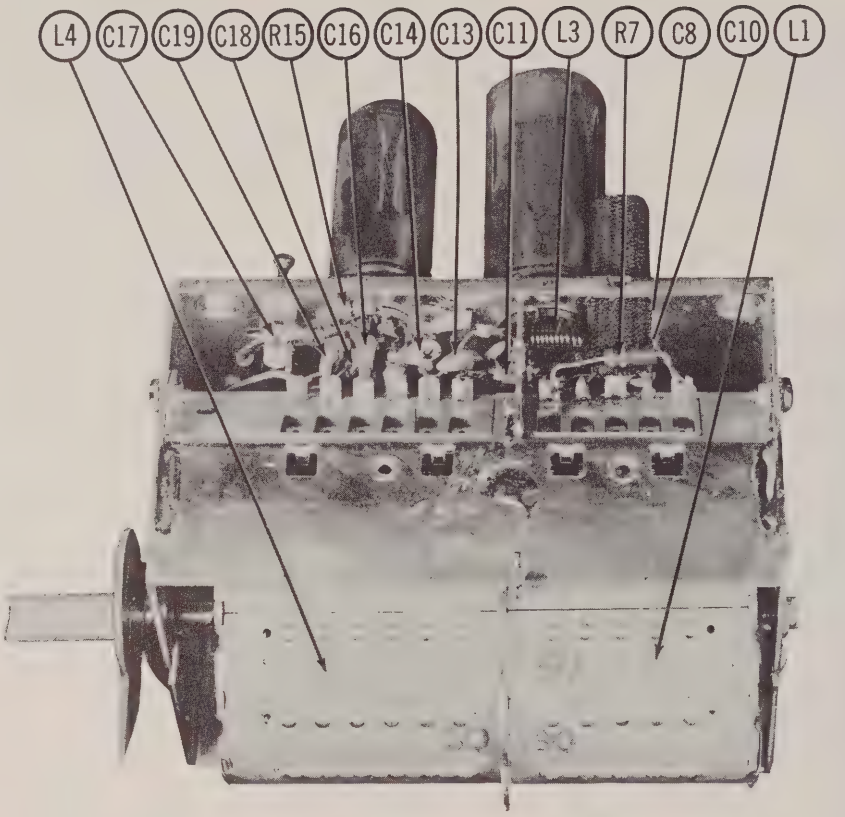
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	610KΩ	0Ω	.1Ω	0Ω	†6.2KΩ	120KΩ	INF	0Ω
V 2	6J6	‡10.3KΩ	‡300Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	580KΩ	68Ω	.1Ω	0Ω	‡300Ω	‡300Ω	0Ω		
V 4	6CB6	576KΩ	47Ω	.1Ω	0Ω	‡200Ω	‡200Ω	0Ω		
V 5	6CB6	.2Ω	100Ω	.1Ω	0Ω	‡100Ω	‡100Ω	0Ω		
V 6	6AC7	0Ω	0Ω	20Ω	1 Meg	20Ω	†15KΩ	.1Ω	†4.7KΩ	
V 7	6SN7GT	568KΩ	†15KΩ	0Ω	2.2Meg	‡68KΩ	0Ω	0Ω	.1Ω	
V 8	6AU6	470KΩ	0Ω	.1Ω	0Ω	‡4.7KΩ	‡4.7KΩ	82Ω		
V 9	6T8	INF	22KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	‡470KΩ
V 10	6AS5	40KΩ	370KΩ	.1Ω	0Ω	370KΩ	†673KΩ	†1.1KΩ		
V 11	12AU7	†680KΩ	‡0Ω	‡270KΩ	0Ω	0Ω	†12.1KΩ	†680KΩ	‡3.9KΩ	.1Ω
V 12	6C4	▲4.5Meg	INF	.1Ω	0Ω	▲4.5Meg	1.9Meg	0Ω		
V 13	6BQ6GT	INF	0Ω	INF	8.5KΩ	2.2Meg	INF	.1Ω	620Ω	Top Cap †873Ω
V 14	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	6SN7GT	5.1Meg	†3.4KΩ	1.5KΩ	100KΩ	†270KΩ	1.5KΩ	.1Ω	0Ω	
V 16	6CD6G	150Ω	.1Ω	150Ω	†8.4KΩ	470KΩ	470KΩ	0Ω	†8.4KΩ	Top Cap ▲8Ω
V 17	6AX4GT	▲15Ω	▲16Ω	550KΩ	▲100KΩ	†340Ω	INF	▲12Ω	▲12Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲368Ω
V 19	5U4G	INF	30KΩ	INF	20Ω	INF	21Ω	INF	30KΩ	
V 20	5U4G	INF	30KΩ	INF	20Ω	.1Ω	21Ω	INF	30KΩ	
V 21	27NP4	0Ω	‡45KΩ	Pin 10 ▲33KΩ	Pin 11 235KΩ	Pin 12 .1Ω				

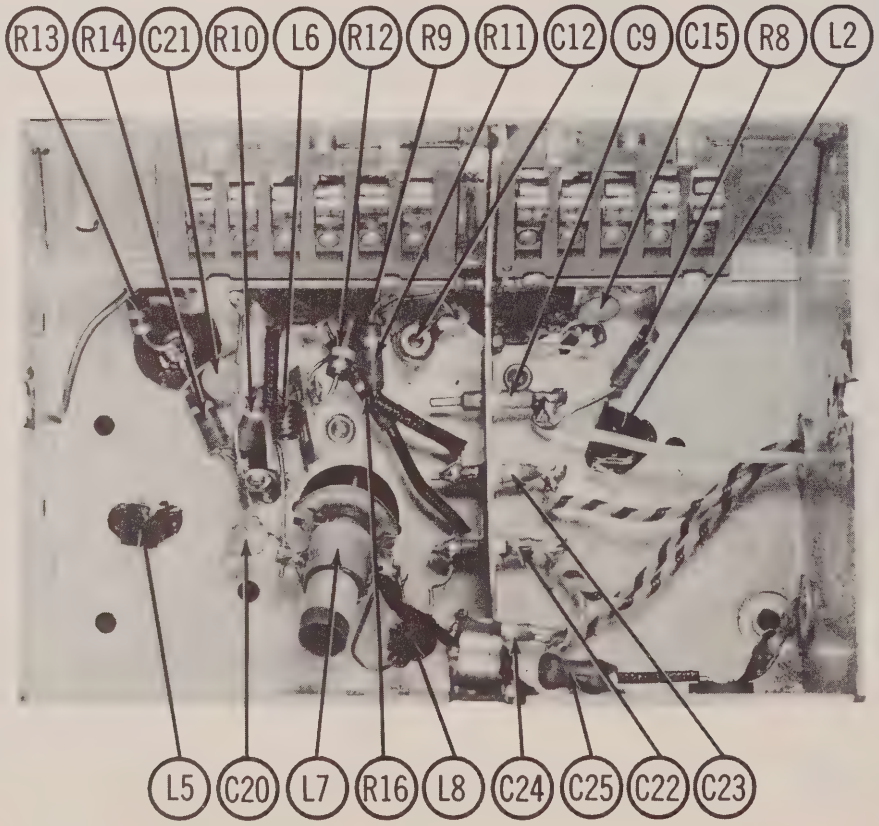
▲ MEASURED FROM PIN 3 OF V17.
‡ MEASURED FROM PIN 1 OF V10.
† MEASURED FROM PIN 8 OF V19 & V20.



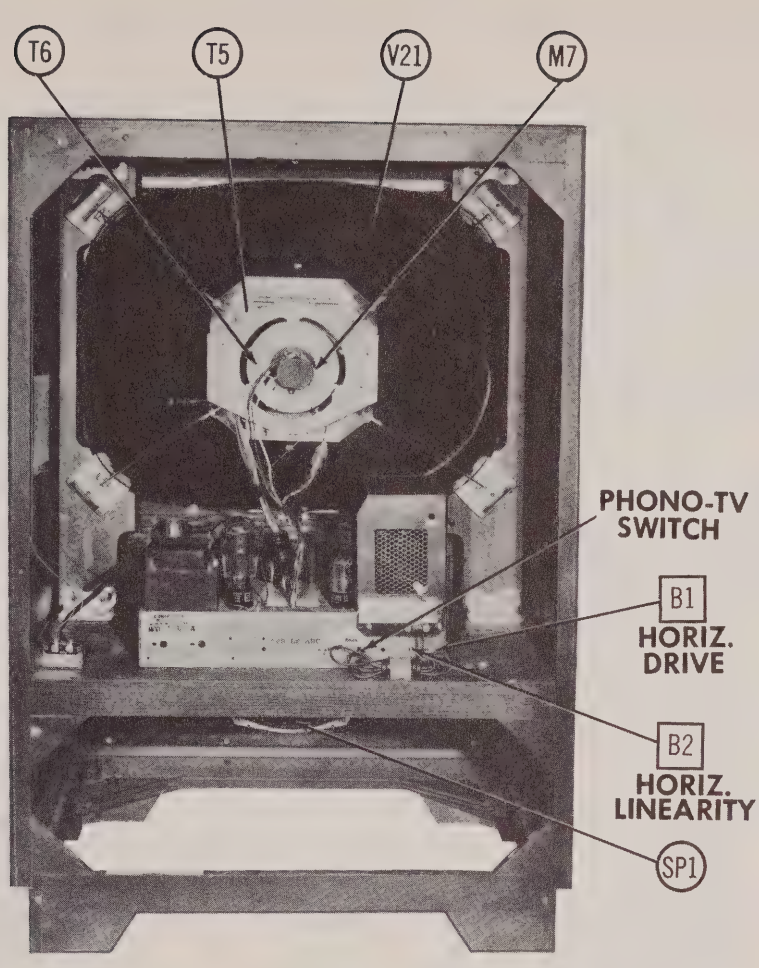
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

PROPERTY OF
L. F. BLANKENSHIP

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the horizontal linearity slug (B2) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check horizontal deflection yoke for open. Check C85 for open. Check C87.

INSUFFICIENT SWEEP

Check setting of horizontal drive, B1, and horizontal linearity, B2. Substitute V15, V16 and V17. Check V19 and V20 by substitution. Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check C82, C83, T3, C80, R91 and R92. Check other associated components.	Check C78, C79, and other components associated with the horizontal oscillator and coupling network.

DRIVE LINES

Check setting of drive control, B1.
Substitute V16 and V17. Check C82 and C83 for open.

COMPRESSED LEFT SIDE

Substitute V16 and V17. Check T3 and associated circuit components.

FOLDS

Substitute V16 and V17. Check T3, C82, C83 and C85.
Check horizontal deflection yoke.

XMAS TREE EFFECT

Check L25 for short and C76 for open.

VERTICAL

LOSS OF SWEEP

Substitute V12 and V13. Check waveform at W8.

If Satisfactory	If Unsatisfactory
Check T4, C68, C1C, C3B and vertical deflection yoke.	Check T2, C67, C65 and other associated components.

INSUFFICIENT SWEEP

Substitute V12 and V13. Proceed as outlined under "LOSS OF SWEEP".

COMPRESSED AT BOTTOM

Substitute V12 and V13. Check C67 for leaky condition. Check C3B for open.

COMPRESSED AT TOP STRETCHED AT BOTTOM

If adjustment of height and vertical linearity controls do not correct this condition, check C66.

FOLDS

Substitute V12 and V13. Check C3B.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V14 and V15. Check C73, C74, C75, C71, C72 and other associated components. Check C81.

CRITICAL SYNC

Substitute V14 and V15. Proceed as outlined under "LOSS OF SYNC".

PULLING PICTURE

Substitute V15. Check C74 and C75. Check other associated circuit components.

VERTICAL

LOSS OF SYNC

Substitute V12. Check C65 and vertical integrator network.
Check components associated with V12.

CRITICAL SYNC

Substitute V7, V11 and V12. Proceed as outlined under "LOSS OF SYNC".

TRIGGERING

Substitute V12, V11 and V7. Check circuits near these tubes for filament lead dress.

VIDEO

LOSS OF VIDEO

Substitute V6 and V7. Check video detector diode, M5. Check C41, C45 and and other associated components. Check picture tube.

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC trap adjustment, A8

POOR RESOLUTION

Substitute RF tuner, video IF and video amplifier tubes. Check video IF alignment. Check components of the video IF stage.

SMEAR

Substitute V6. Check video detector, M5. Check C41 and C45 for leakage. Check L20 for open. Check R33, R34, R35, R36, R31 and R6 for change of value. Check picture tube.

POOR CONTRAST

Substitute V6. Check video detector crystal, M5. Check video components. Check picture tube.

ONE WIDE BLACK BAR ACROSS PICTURE

Check RF tuner, video IF and video amplifier tubes for heater to cathode leakage and filament lead dress.

AUDIO

WEAK OR NO SOUND

Substitute V8, V9 and V10. Check circuit of V9B and V10 by shorting pin 8 of V9 to chassis a loud noise should result.

If Satisfactory	If Unsatisfactory
Check alignment of audio IF and discriminator, A5, A6 and A7.	Check components associated with V9 and V10.

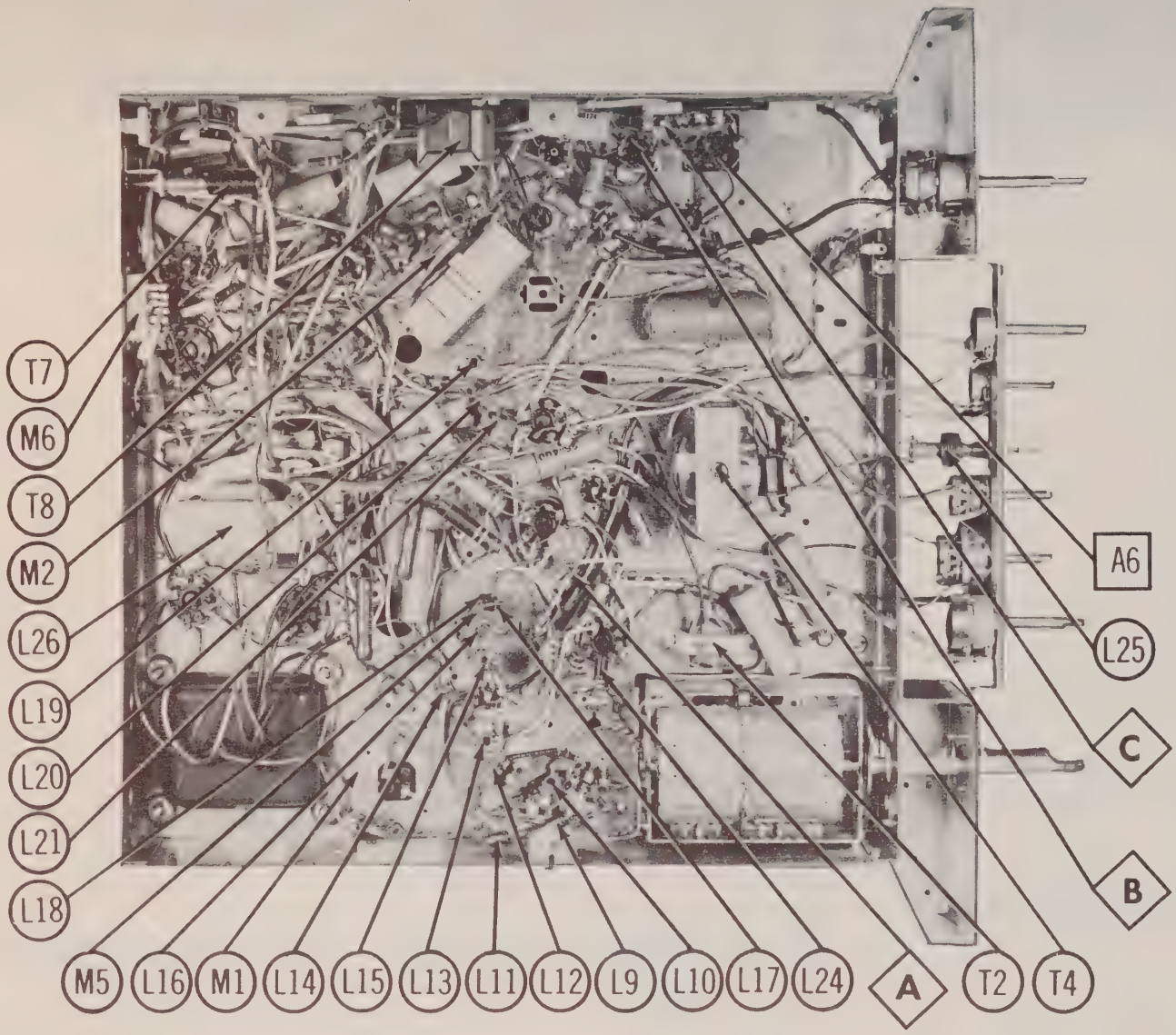
BUZZ

Check adjustment of local oscillator. Align sound IF and discriminator, A5, A6 and A7. If buzz is still present substitute V9 and readjust A6 and A7. Check C4 and C51.

DISTORTED

Check audio stages V9 and V10 using audio signal generator.

If Distorted	If Undistorted
Substitute V9 and V10. Check associated circuit components.	Check alignment of sound IF and discriminator A5, A6 and A7.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stewart-Warner PART No.	STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	9BP	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output- Noise Limiter	6AC7	6AC7	8N	
V7	Noise Limiter - Control-Sync Amplifier	6SN7GT	6SN7GT	8BD	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Discriminator- AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6A85	6A85	7CV	
V11	Sync Separator- Sync Phase Inv.	12AU7	12AU7	9A	
V12	Vert. Oscillator	6C4	6C4	9BG	
V13	Vert. Output	6BQ6GT	6BQ6GT	8AM	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6CD6G	6CD6GT	5BT	
V17	Damper	6AX4GT	6AX4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stewart-Warner PART No.	SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V21	27NP4	27GP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	509001	AFH3-43		CO34		FP378.8	TVL-3785	
B	▲40	450								
C	▲10	450								
C2	40	300	160095	PR8450/40		BR4035		TC78	TVA-1811	
C3	▲80	250	509002	AFH3-142		BO60		FP375	TVL-3830	
B	▲100	50							TVA-1310	
C4	10	150	505174	PR8350/10		BR1015		TC42	TVA-1406	
C5	10	600	506680	PR8600/10		BR1V610		TC92	TVA-1855	
C6	10	450	161034	PR8450/10		BR1045A		TC72	TVA-1705	
C7	4	150	520921	PR8150/4		BR415		TC40	TVA-1402	
C8	3-9		509084		829-10					
C9	800			CN-1-001	MFT-1000		NP0K-3R6		503C-D1	
C10	3.6		520721							
C11	800			CN-1-001	MFT-1000				503C-D1	
C12	.5-3		507968		829-3			CT585A		
C13	1.5		520720	SH1,5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	57CCB-V15	
C14	47		520719	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C15	1000		520735							
C16	47		520719							
C17	.5-3		SP7968		829-3			CT585A		
C18	10		520718	SH10NP0	TCZ-10		NP0K-100	ZT-541	57CC-Q1	
C19	5		520717	SI5N750	TCN-5		N750K-050	NT-555	57CUB-V5	
C20	6.8		520716	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	57CCB-V68	
C21	1000		520735	BP0-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	800			CN-1-001	MFT-1000				503C-D1	
C23	800			CN-1-001	MFT-1000				503C-D1	
C24	800			CN-1-001	MFT-1000				503C-D1	
C25	120		519029		TCN-120		N750L-121			
C26	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C27	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C28	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C29	82		513016							
C30	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C32	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C33	82		513016							
C34	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C36	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	5		513432	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	57CCB-V47	
C38	82		513016							
C39	5		513432	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	57CCB-V47	
C40	.25	200	512945	P488-25		PJ2P25		PT4025	57M-P25	
C41	.1	300	512033	P388-1	DF-104	PJ3P1		PT401	57M-P1	
C42	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	.25	400	512233	P488-25		PTE4P25		PT4025	4TM-P25	
C44	47		513438	SI47NP0	TCZ-47		NP0L-470	ZT-545	57CC-Q47	
C45	.1	400	512035	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C46	.05	600	512031	P688-05	DF-503	PTE6S5		PT605	6TM-S5	
C47	2.2		513001							
C48	47		513002	SI47N330						
C49	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C50	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	1500		513010	SI1500	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C52	1500		513010	SI1500	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C53	1500		513010	SI1500	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C54	.05	200	512027	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C55	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT605	6TM-D5	
C56	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT605	6TM-D5	
C57	270		513006	SI270	D6-271			CC-5327	5GA-T27	
C58	.01	400	512011	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C59	.01	200	512009	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C60	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT605	6TM-D5	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	270	600	513006	SI270	D6-271			UC-5327	5GA-T27	
C62	.01	800	512013	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C63	.05	400	512039	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C64A	.01			P688-01		PTE6S1		PT611		
B	.002		▲508062	P688-002	†PC-100	PTE6D2	† 1405-01	PT622	*10C1	
C	.005			P688-005	DD-1032	PTE6D5	811-01	PT625	5HK-S1	
D	.005			P688-005		PTE6D5		PT625		
C65	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C66	.1	600	512037	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C67	.1	600	512037	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C68	.05	200	512031	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C69	.05	600	512031	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C70	.02	600	512019	P688-02	DD-203	PTE6S2		PT612	6TM-S2	
C71	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C72	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C73	.01	200	512009	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C74	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C75	.05	200	512027	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C76	3900	500	512540	1464-004		1DR5D4		MCB463	MS-24	
C77	390	500	512535	1469-0004		5RS7T4		MCB243	MS-34	
C78	390	500	512535	1469-0004		5RS7T4		MCB243	MS-34	
C79	1000	500	512515	1464-001		2RS5D1		MCB255	MS-21	
C80	.25	600	512049	684-25		PTE6P25		PT6025	6TM-P25	
C81	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C82	.05	600	512031	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C83	.05	600	512031	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C84	500	20000	508688	HV30B	TV4-502	MMC-C30TE	415-501		20DK-T5	
C85	.25	400	512223	P488-25		PTE4P25		PT4025	4TM-P25	
C86	130	2000	512546							
C87	130	2000	512546							
C88	5000		513013	BP0-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C89	82		513016	SI82			GP1K-820		5GA-Q82	
C90	.01	600	512255	692ZX-01		PJ6S1		PT611	6TM-S1	
C91	.01	600	512255	692ZX-01		PJ6S1		PT611	6TM-S1	

▲ Items C64A, C64B, C64C, C64D, R62A, R62B, R62C are combined in one unit.
† Install DD-1032 in series with PC-100 input lead to replace manufacturer's original unit.
‡ Install 811-01 in series with 1405-01 input lead to replace manufacturer's original unit.
* Install 5HK-S1 in series with 10IC1 input lead to replace manufacturer's original unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	Stewart-Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	7500	2	520292	QJ-341 *	RTV-389		WP751	Contrast-wire wound-panel
B	1Meg	½					UR16T25 †	Volume-tapped ⑤200KΩ-rear
C	Switch						US-26	Attach to R1B
R2A	500KΩ	½	520746	QU-133	AG-58-8	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	100KΩ	½	509993	QU-138	AG-49-8	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	R3-5/8	AK-4	Not Req.	Attach to R3A
R4A	2.5Meg	½	508893	QJ-323 **	RTV-313		UF255L	Height-Panel
B	1Meg						UR16L	Vert.Hold-Rear
R5A	10KΩ	4	509302		RTV-341			Focus-wire wound-panel
B	5000Ω							Vert. Linearity-rear
R6A	30KΩ	½	520745	QU-121				Power Booster
B	20KΩ			MU-121				

* CONCENTRIKIT EQUIVALENT- KIT K-3, BASE ELEMENTS & SHAFTS W17-105 & P3-131 (Panel)
B13-137X & R1-226 (Rear) & SWITCH 76-1.
** CONCENTRIKIT EQUIVALENT- KIT K-2, BASE ELEMENTS & SHAFTS B11-239 & P1-112 (Panel)
B11-137 & R1-115 (Rear)
† Universal Replacement (Mallory exact duplicate part #UE23WS).

RESISTORS

ITEM No.	RATING: OHMS	WATT	Stewart-Warner PART No.	IRC PART No.	NOTES
R7	15KΩ	½			
R8	47KΩ	½		BTS-47K	
R9	100KΩ	½			
R10	180KΩ 5%	½		BTS-180K 5%	
R11	1500Ω	½		BTS-1500	
R12	100KΩ 5%	½			
R13	10KΩ	½			
R14	220KΩ	½			
R15	10KΩ	½		BTS-10K	
R16	10KΩ	½		BTS-15K	
R17	12KΩ 5%	½	510723		
R18	68Ω	½	510118	BTS-68	
R19	390Ω	½	510120	BTS-390	
R20	8200Ω	½	510153		
R21	47Ω	½	510112	BTS-47	
R22	100Ω	½	510119	BTS-100	
R23	5600Ω	½	510150		Note 1
R24	100Ω	½	510118	BTS-100	
R25	100Ω	½	510119	BTS-100	
R26	100Ω	½	510119	BTS-100	
R27	18KΩ	½	510159	BTS-18K	
R28	8200Ω	½	510163	BTS-8200	
R29	560KΩ	½	510186	BTS-560K	
R30	1Meg	½	510191	BTS-1Meg	
R31	10KΩ	½	510118	BTS-10K	
R32	12KΩ 5%	½	510723	BTS-12K 5%	
R33	10KΩ	½	510154	BTS-10K	
R34	4000Ω	5	510763		
R35	470KΩ	½	510184	BTS-470K	
R36	470KΩ	½	510184	BTS-470K	
R37	22KΩ	½	510160	BTS-22K	
R38	33KΩ	½	510164	BTS-33K	
R39	2200Ω	½	510142	BTS-2200	
R40	18KΩ	½	510149	BTS-18K	
R41	470KΩ	½	510184		
R42	82Ω	½	510117	BTS-82	
R43	4700Ω	½	510149	BTA-4700	

ITEM No.	RATING: OHMS	WATT	Stewart-Warner PART No.	IRC PART No.	NOTES
R44	220Ω	½	510124	BTS-220	
R45	18KΩ	½	510159	BTS-18K	
R46	220Ω	½	510124	BTS-220	
R47	22KΩ	½	510160	BTS-22K	
R48	68KΩ	½	510170	BTS-68K	
R49	10Meg	½	510197	BTS-10Meg	
R50	470KΩ	½	510184	BTS-470K	
R51	680KΩ	½	510746	BTS-680K	
R52	820KΩ 5%	½	510747	BTS-820K 5%	
R53	270KΩ	½	510180	BTS-270K	
R54	2.2Meg	½	510193	BTS-2.2Meg	
R55	68KΩ	½	510169	BTS-68K	
R56	270KΩ	½	510180	BTS-270K	
R57	680KΩ	½	510187	BTS-680K	
R58	3900Ω 5%	½	510748	BTS-3900 5%	
R59	68000Ω	½	510151	BTS-6800	
R60	4700Ω 5%	½	510750	BTS-4700 5%	
R61	27KΩ	½	510163	BTS-27K	
R62A	2.2Meg	5%		BTS-22K	
B	8200Ω	½	▲508062	BTS-8200	
C	8200Ω			BTS-8200	
R63	3.2Meg 5%	½	510777	BTS-3.2Meg5%	
R64	2.7Meg	5%	510772	BTS-2.7Meg 5%	
R65	680Ω	½	510134	BTS-680	
R66	2.2Meg	½	510193	BTS-2.2Meg	
R67	270Ω	½	510126	BTS-270	
R68	12KΩ	2	510356	BTB-12K	
R69	12KΩ	2	510356	BTB-12K	
R70	10KΩ	½	510254	BTS-10K	
R71	560Ω	½	510132	BTS-560	
R72	560Ω	½	510132	BTS-560	
R73	1000Ω	½		BTA-1000	
R74	27KΩ	½	510162	BTS-27K	
R75	6800Ω	½		BTS-6800	Note 4
R76	15KΩ	½		BTA-15K	Note 4
R77	100KΩ 5%	½	510751	BTS-100K 5%	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	NOTES
R78	100KΩ 5%	½	510751	BTS-100K 5%	
R79	4.7Meg	½	510195	BTS-4.7Meg	
R80	470KΩ	½	510184	BTS-470K	
R81	1500Ω	½	510139	BTS-1500	
R82	3300Ω	½	510145	BTS-3300	
R83	100KΩ	½	510172	BTS-100K	
R84	270KΩ	½	510180	BTS-270K	
R85	56000Ω 5%	1		BTA-5600 5%	Note 2
R86	470KΩ	½	510184	BTS-470K	
R87	100Ω	½	510119		
R88	330Ω	2	510327	BW-2-330	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	NOTES
R89	270Ω	2	510328	BW-2-270	
R90	47Ω	½	510113		
R91	4000Ω	3	510773	1 3/4A-4000	
R92	4000Ω	3	510773	1 3/4A-4000	
R93	330Ω	10	510757	1 3/4A-330	
R94	100KΩ	1	510786	BTB-100K	
R95	600Ω	10	510741	1 3/4A-600	
R96	4000Ω	3	510773	1 3/4A-4000	
R97	220KΩ	1		BTB-220K	Note 3
R98	1Meg	1			

Note 1. Chassis not containing a "B" in series designation use a 4700Ω resistor in this application.
Note 2. Some Models may use a 4700Ω resistor in this application.
Note 3. Some Models may use a 200KΩ resistor in this application.
Note 4. Some Models may use a single 22KΩ resistor in this application.
* Items R62A, R62B, R62C, C64A, C64B, C64C, C64D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC	650VCT	5VAC	6.3VAC	521158	P-8166				
	④ 2.5A	.300ADC	⑤ 6A	⑥ 1.2A		① ②				
				SEC.4						
				6.3VAC						
				⑥ 9.7A						

① Drill new mounting holes.
② Parallel the two 6.3V - 5A winding for Sec.4.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	153Ω	940Ω	508078	A-8125	A-3003	TBO-5	A-97X	2087Z ⑧	Vert. Osc. Trans.
T3	384Ω Tap ⑥		521343					2357Z	Horiz. Output Trans.
	④2.3Ω, 3.3Ω, 14.3Ω, 160, 24Ω								
T4	800Ω tap ⑥ 9Ω		508375	A-8123 ⑦	A-3038 ①	TSO-5 ⑤	A-99X ①	2047Z ① ⑧	Vert. Output Trans.
T5 A	15Ω		115311 ⑨					219D1	Horiz. Deflection Coils
B	48Ω								Vert. Deflection Coils
T6	12KΩ		162326 ③						Focus Coil
T7	9Ω		520911			WC-12 ⑤		212R1	Horiz. Linearity Coil
			521336 ④						

① Connect as auto trans.
② Drill new mounting hole.
③ Includes cable and plug.
④ Horiz. Linearity coil slug core.
⑤ Connect to coded blue and red terminals.
⑥ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	4.3K□	3.5Ω	450Ω	.9Ω	509376	A-3877	A-3930	RO-8	S-5X	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP	Stewart-Warner PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6 x 9"	PM	3.5Ω	508174	ST-810 Mod. P69-V	69A2	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (@ CURRENT 1000 ^c)	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L26	.300ADC	73Ω	2.9 Hy.	508341	C-2326 ①		TR-3300 ①	

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		Stewart-Warner PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
		PRI.	SEC.					
L1A	Ant. Coil	0Ω CT	0Ω	520702				Channel 2
B	Ant. Coil	0Ω CT	0Ω	520703				Channel 3
C	Ant. Coil	0Ω CT	0Ω	520704				Channel 4
D	Ant. Coil	0Ω CT	0Ω	520705				Channel 5
E	Ant. Coil	0Ω CT	0Ω	520706				Channel 6
F	Ant. Coil	0Ω CT	0Ω	520707				Channel 7
G	Ant. Coil	0Ω CT	0Ω	520708				Channel 8
H	Ant. Coil	0Ω CT	0Ω	520709				Channel 9
I	Ant. Coil	0Ω CT	0Ω	520710				Channel 10
J	Ant. Coil	0Ω CT	0Ω	520711				Channel 11
K	Ant. Coil	0Ω CT	0Ω	520712				Channel 12
L	Ant. Coil	0Ω CT	0Ω	520713				Channel 13
L2	Fil. Choke	0Ω		520518				
L3	Neutr.Coil	0Ω		520701				

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STEWART WARNER
MODEL 27C-9212A Series ABC

PARTS LIST AND DESCRIPTIONS (Continued)

(COILS CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stewart-Warner PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L4A	RF, Mixer Grid & Osc. Coil	0Ω		520722				Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω		520723				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		520724				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		520725				Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		520726				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		520727				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		520728				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		520729				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		520730				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		520731				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		520732				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		520733				Channel 13
L5	Fil. Choke	0Ω		520520				
L6	RF Choke	0Ω		520714				
L7	1st. Video IF	.8Ω		520734	17-1004	TV-103 *	6189 *	Includes core, core part #509062
L8	RF Choke	1.2Ω		520715				
L9	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L10	2nd. Video IF	.2Ω		507343	17-1004	TV-103 *	6189 *	Less core, core part #507357
L11	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L12	RF Choke	2.4Ω		507367			4626	23 Microhenries
L13	3rd. Video IF	.2Ω		507343	17-1003	TV-102 *	6188 *	Less core, core part #507357
L14	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L15	4th. Video IF	.2Ω		507343	17-1004	TV-103 *	6189 *	Less core, core part #507357
L16	RF Choke	3.4Ω		507367			4626	23 Microhenries
L17	Series Peaking Coil	8.2Ω		520620	19-3180	TV-184	6180	180 Microhenries
L18	Shunt Peaking Coil	20Ω		520985	19-3660		4650	650 Microhenries
L19	4.5MC Trap	2Ω		509603	20-1004	TV-151	1470	Includes core, core part #507357, Stewart-Warner part # also includes C44
L20	Series Peaking Coil	9Ω		520689	19-3180	TV-184	6180	180 Microhenries
L21	Shunt Peaking Coil	14.5Ω		509342	19-1923	TV-188	4648	394 Microhenries
L22	Sound IF	1.2Ω		509378			1470 A	
L23	Ratio Det.	4Ω	.8Ω CT	509706		TV-115 †	6205 †	Tertiary Winding -.4Ω
L24	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L25	Horiz. Osc.	80Ω		508967	19-1576	TV-163	6210	Includes core, core part #508963

† Use adaptor plate.
* Enlarge mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Stewart-Warner PART No. FUSE	Stewart-Warner PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG-P/T	1A @ 250V	509517		318001		GJV-1	
M2A	3AG-P/T	1/2 A @ 250V	521381		318.500		GJV-1/2	
* B	3AG-P/T	1/4A @ 250V	508063		318.250		GJV-1/4	

* Used in chassis not bearing "Series C" designation.

MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M3	Dial Light	118921	Type No. 47 8V, 150MA
M4	RF Tuner	520645	
M5	Crystal	509386	Video Detector
M6	Switch	520563	Phono-TV
M7	Ion Trap Magnet	508603	
	Trimmer Capacitor	520127	25-280MMF, Horiz. Drive Control
	Cabinet	520850-A	
	Cabinet Back	115313	
	Safety Glass	520867	
	Mask	520866-B	Pix Tube (Green)
	Knob	521174	Channel Selector (Maroon)
	Knob	509019	Contrast
	Knob	509017	Fine Tuning
	Knob	520831	Off-On Volume (Maroon)
	Knob	520740-B	Tone or Power Boost (Maroon)

TROUBLE SHOOTING AIDS (CONT.)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V15, V16, V17 and V18. Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check C82, C83, C84 and C85. Check T3, R98, yoke and other associated components.	Check C78, C79, Horizontal drive and other associated components.

INSUFFICIENT HIGH VOLTAGE

Substitute V15, V16, V17, V18, V19 and V20. Proceed as outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Substitute V17 and V18. Check R98, C84, T3 and other associated components. Check picture tube.

POWER

SMALL AND / OR DIM RASTER

Substitute V19 and V20. Check B+ filter capacitors and network. Proceed as outlined under "HORIZONTAL LOSS OF SWEEP".

DIM PICTURE WEAK SOUND

Substitute V19 and V20. Check B+ capacitors and filter network.

GENERAL

RASTER NO SOUND NO PICTURE

Substitute V1, V2, V3, V4, V5, V6 and V7. Check video detector crystal M5. Check video IF components.

RASTER SNOWY PICTURE WEAK SOUND

Substitute V1, V3, V4 and V5. Check video detector crystal, M5. This condition may be caused by two or more of the video IF and RF amplifier tubes being weak. This condition will be more noticeable in strong signal areas. In weak signal areas there would probably be a total loss of video and sound.

RASTER SOUND NO PICTURE

See "LOSS OF VIDEO".

TOTAL LOSS OF SYNC

Substitute V7 and V11. Check C62, C53 and other components associated with V7 and V11.

POOR FOCUS

Check adjustment of Focus control. Substitute V19 and V20 and readjust focus control. Check focus coil, T6. Check picture tube.

SET DEAD

Check fuse, M1. Check jumper connections at deflection yoke plug. Check AC interlock assembly. Check T1.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

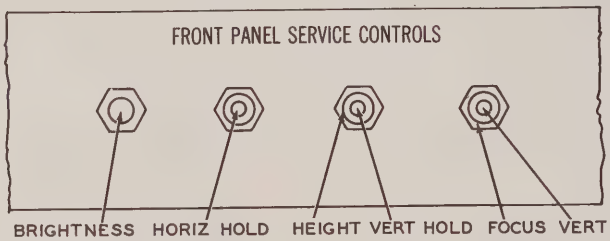
PICTURE TUBE SAFETY GLASS CLEANING

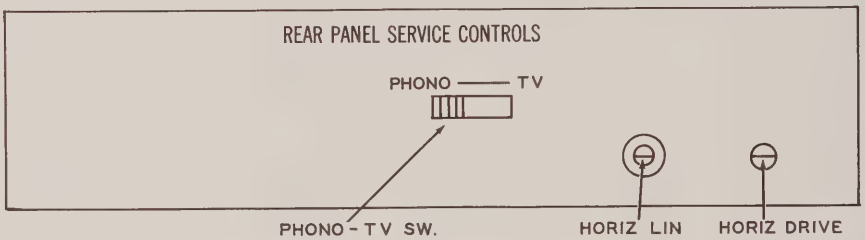
Remove 4 brass wood screws at top of cabinet. Remove brass trip and tilt safety glass forward, and lift out. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





SPECIAL ADJUSTMENTS

Tune to a strong TV signal. Adjust brightness and contrast controls for normal viewing. Starting from maximum counter clockwise position, adjust power booster control in clockwise direction until picture becomes unstable, then reverse the adjustment just enough to eliminate the instability or bending of the picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust horizontal hold until receiver synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L23) located on top of chassis. (See tube placement chart).

FUSES

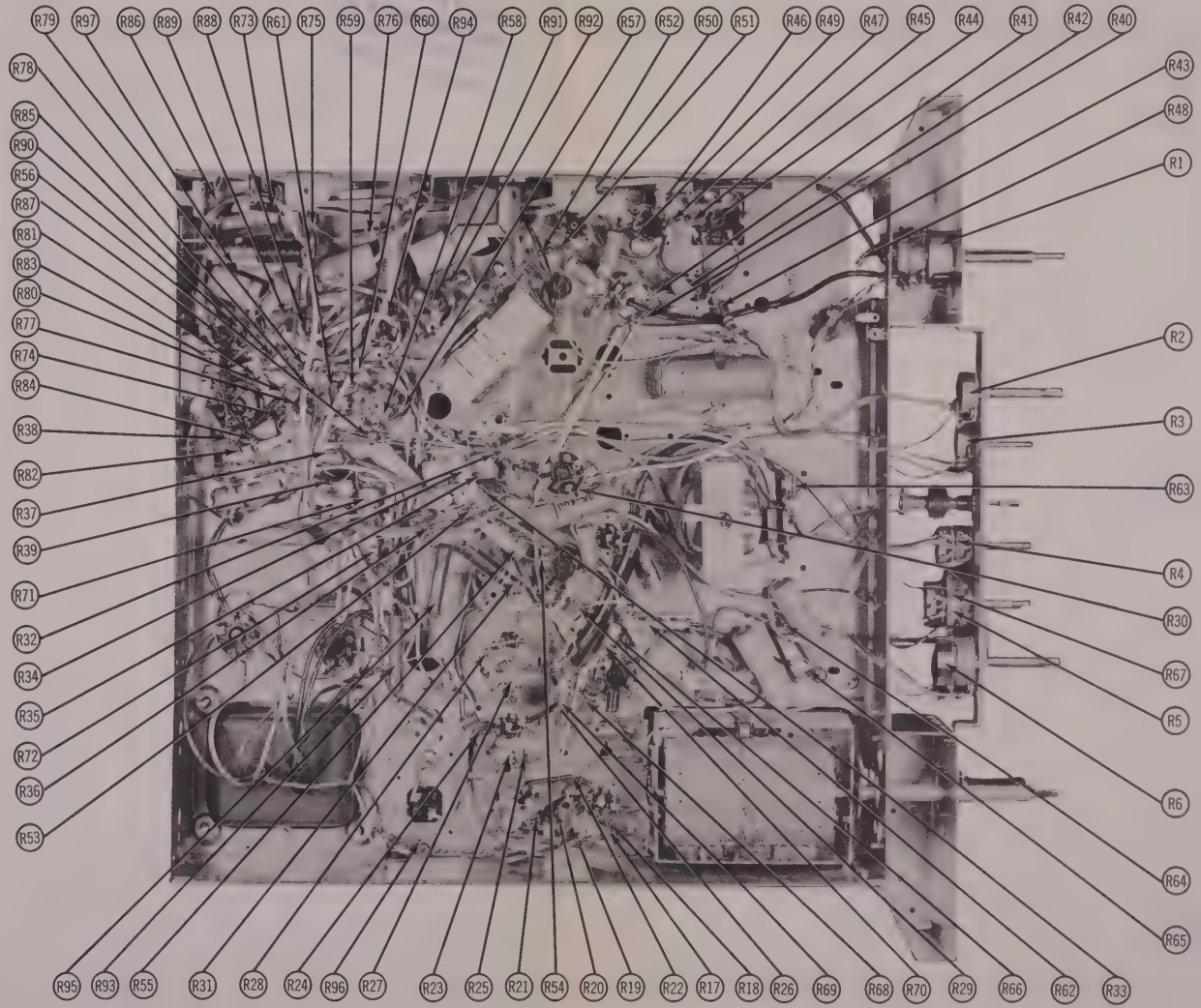
Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by positioning the focus coil. Adjust the three knurled nuts located on the focus coil bracket until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker, focus coil plug, yoke plug, HV lead and CRT socket.
5. Loosen 1 metal screw . Remove yoke bracket.
6. Remove 5 chassis bolts. Remove chassis.
7. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

TRUETONE MODEL D2270

TRUETONE MODEL D2270

TRUETONE MODEL D2270

TRADE NAME	Truetone Model D2270
SUPPLIER	Western Auto Supply Co, 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated AM Superheterodyne Receiver with 3 Speed Record Player
TUBES (Five)	Types 12SA7 Conv., 12BA6 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .2 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

To set pointer, turn tuning gang fully closed and set hairline through center of dial to coincide with index mark on cabinet, with low frequency end of dial at the index mark.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to pin 8 (grid) of 12SA7 (V1). Low side to B-.	455KC (400~Mod.)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust in order given for maximum output
2.	"	"	1620KC	"	"	A5	Adjust for maximum output. If range of A5 is insufficient adjust trimmer at opposite end of stator plates.
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D2270

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7-WA	12SA7	8R	
V2	IF Amplifier	12BA6-WA	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12SQ7-WA	12SQ7	8Q	
V4	Audio Output	50L6GT-WA	50L6GT	7S	
V5	Rectifier	35Z5GT-WA	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	CE-5030WA	PRS150/50-30		EDL-5315		2N520	TVA-2450	Green
B	50	150						PT415	4TM-S5	Red
C2	.05	400	CP-05WA	P488-05	DF-503	PTE4S5		MCB223	MS-34	
C3	40	500	CM-40WA	1469-00004		5R5Q4		MC241	1FM-33	
C4	330	500	CM-300WA	1468-0003	D6-331	5W5T3	GP2K-331	PT625	6TM-D5	
C5	.005	400	CP-005WA	P688-005	D6-502	PTE6D5	GP2-333-502	PT412	4TM-S2	
C6	.02	400	CP-02WA	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C7	.02	400	CP-02WA	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C8	.02	400	CP-02WA	P488-02	DF-203	PTE4S2		PT412	4TM-S2	Note 1

Note 1. Some Models use .05MFD in this application (part #CP-05WA).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	VC5MWA	Q13-133	AM-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A

RESISTORS

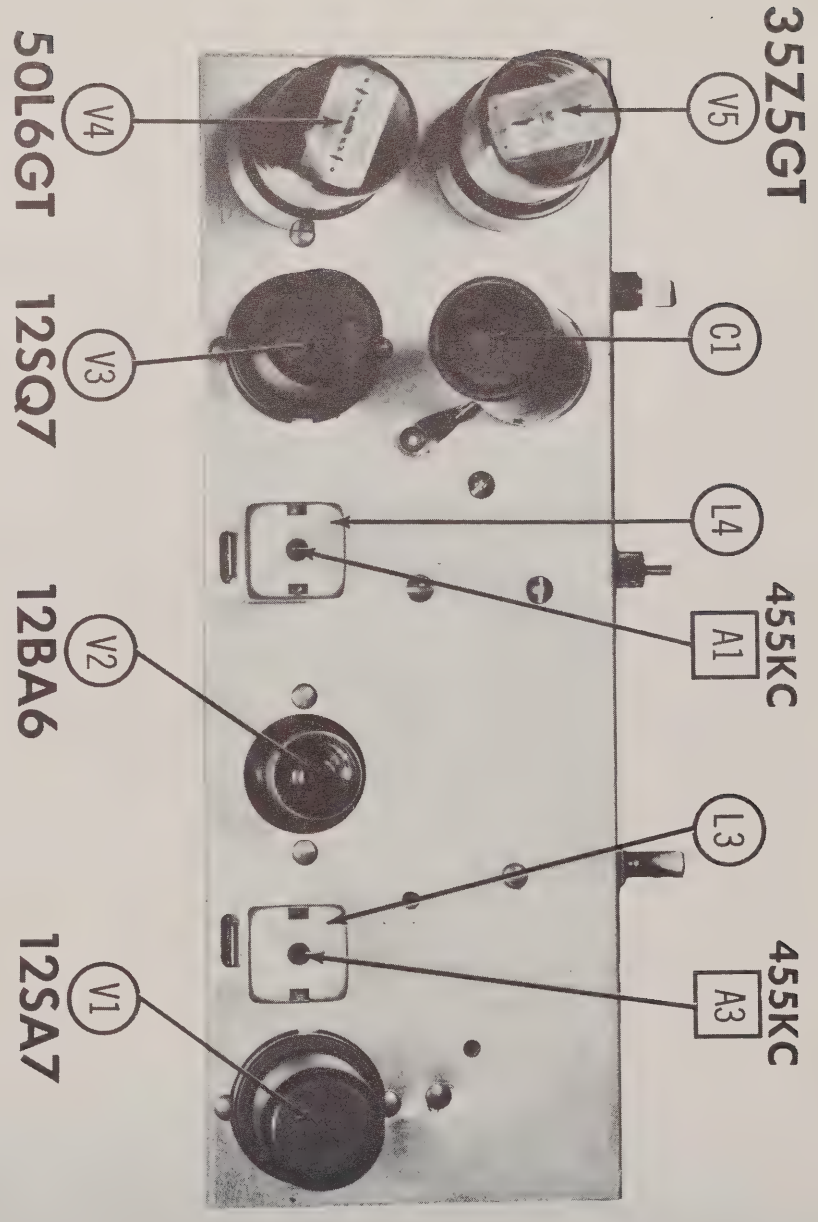
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	22KΩ	½	RC223HWA	BTS-22K	
R3	2.2Meg	½	RC225HWA	BTS-2.2Meg	
R4	100KΩ	½	RC15HWA	BTS-100K	
R5	4.7Meg	½	RC475HWA	BTS-4.7Meg	
R6	330KΩ	½	RC334HWA	BTS-330K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R7	470KΩ	½	RC474HWA	BTS-470K	
R8	150Ω	½	RC151HWA	BTS-150	
R9	2200Ω	1	RC222WA	BTA-2200	
R10	470KΩ	½	RC474HWA	BTS-470K	
R11	82KΩ	½	RC823HWA	BTS-82K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	1.7KΩ	3Ω	142Ω	.65Ω	Part of Spkr.	A-3876 ①	A-2928 ①	RO-2 ①	S-2X ①	① Bend mounting tabs down, file out slots, mount on orig. mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	4 x 6"	PM	3Ω	LS46-WA	46J6	46A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	1.4Ω		LA-WA				
L2	Osc. Coil	6.2Ω		OC-WA			71-Osc.*	Tapped @ .5Ω
L3	Input IF	20Ω	20Ω	IF1-WA	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	14Ω	IFO-WA	16-6758	BC-353	12-C2	

* Drill mounting hole.

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	TRUETONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	F20-WA			*901D		96-0 *2696-0	0-1 or 0-3	* Complete arm & cartridge assembly

SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

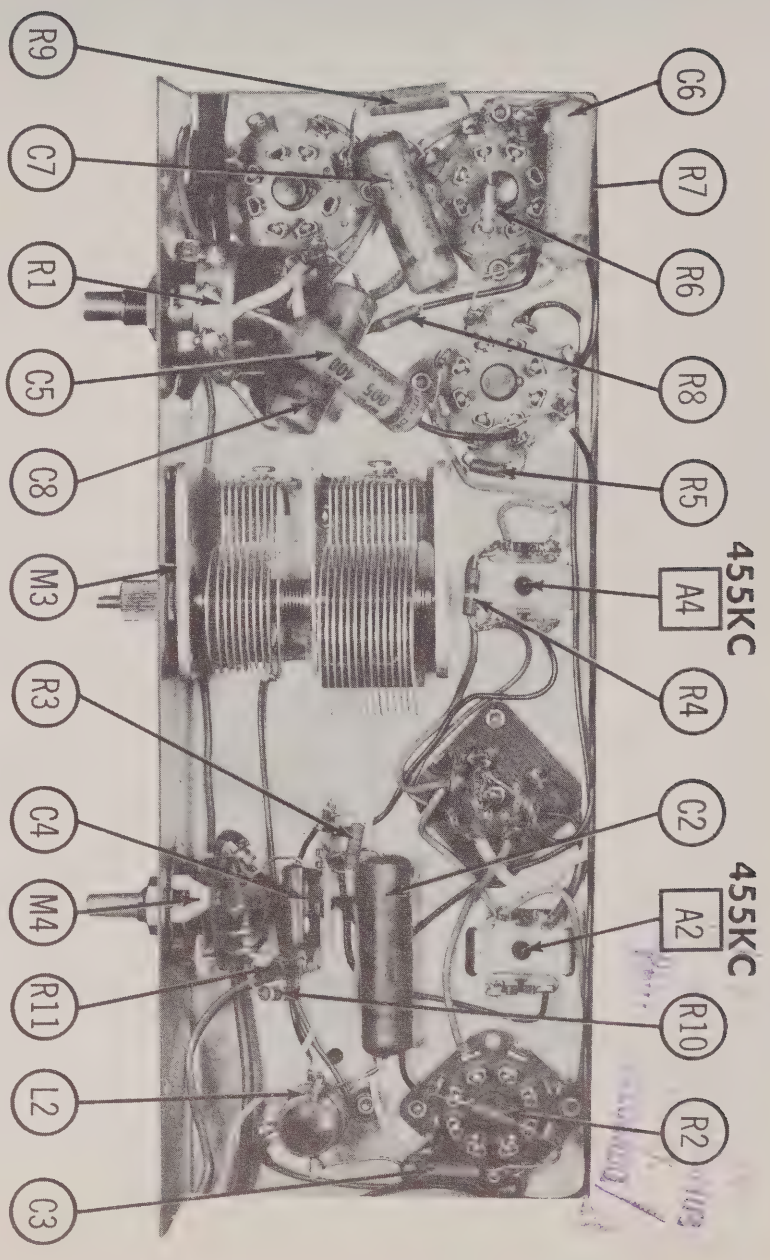
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	TRUETONE PART No.	WALCO PART No.	JENSEN PART No.	
M2	*N-1-3-WA		W-44 or W-44LP	* Set of two

MISCELLANEOUS

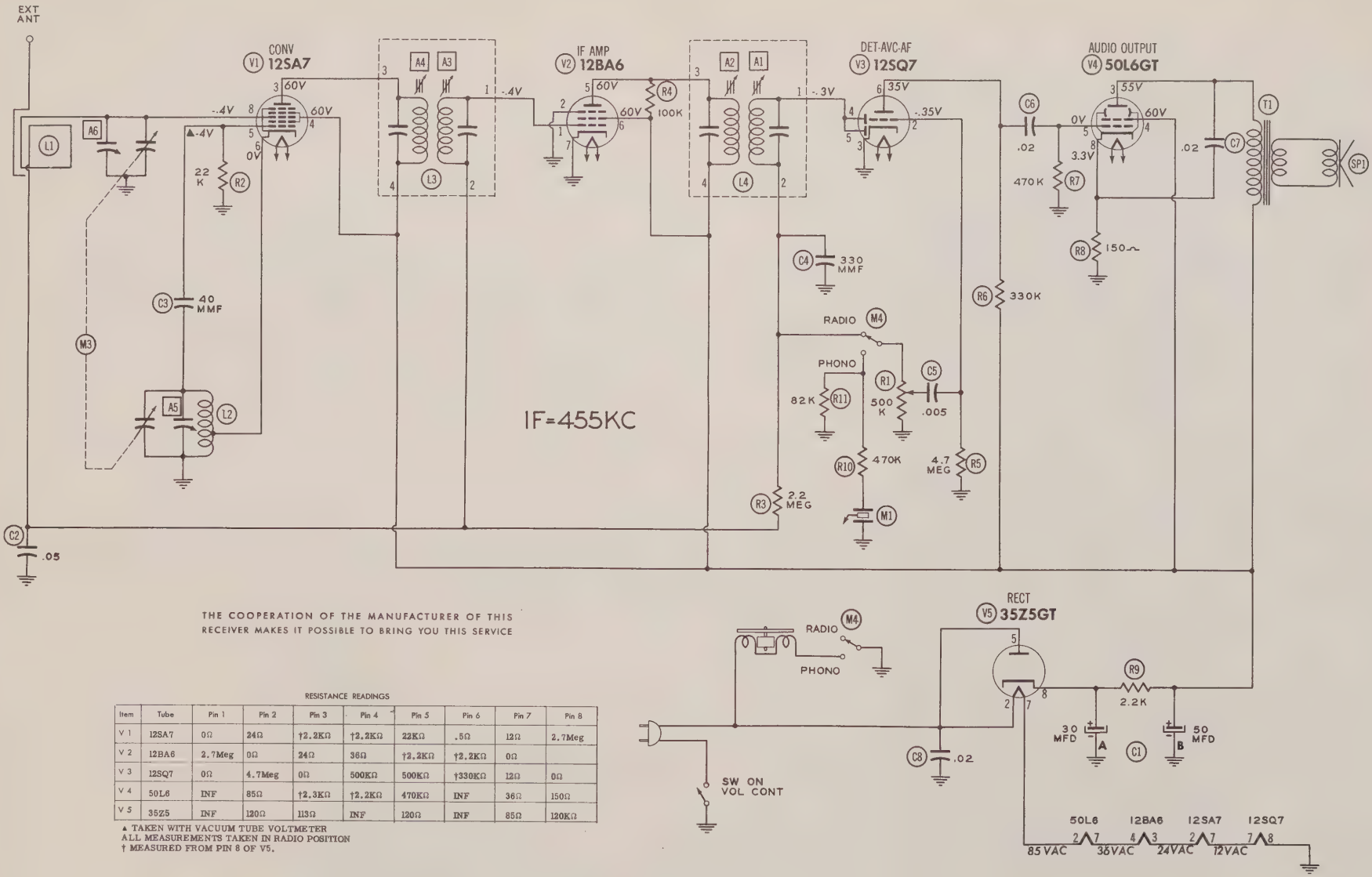
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuning Capacitor	VC-WA	24-467MMF, 16-170MMF
M4	Switch	WS-PR-WA	Phono-Radio
	Cabinet	CB-WA	
	Knob	KNT-WA	Tuning
	Knob	KNPR-WA	Phono-Radio
	Knob	KNV-WA	OFF/ON, Volume
	Pointer	PT-WA	

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2270

TRUETONE MODEL D2270



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0Ω	24Ω	†2.2KΩ	†2.2KΩ	22KΩ	.5Ω	12Ω	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†2.2KΩ	†2.2KΩ	0Ω	
V 3	12SQ7	0Ω	4.7Meg	0Ω	500KΩ	500KΩ	†330KΩ	12Ω	0Ω
V 4	50L6	INF	85Ω	†2.3KΩ	†2.2KΩ	470KΩ	INF	36Ω	150Ω
V 5	35Z5	INF	120Ω	113Ω	INF	120Ω	INF	85Ω	120KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
ALL MEASUREMENTS TAKEN IN RADIO POSITION
† MEASURED FROM PIN 8 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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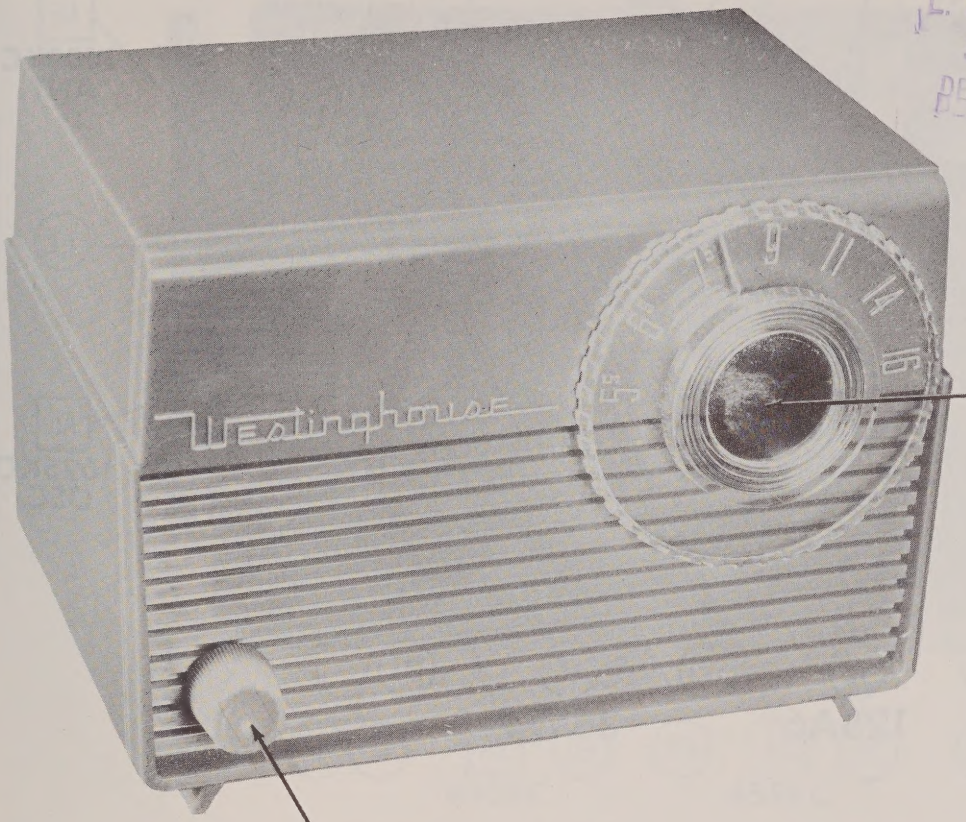
211-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE MODELS H-378T5, H-379T5, H-380T5, H-381T5 (Ch. V-2184-1)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE MODELS H-378T5, H-379T5, H-380T5, H-381T5 (Ch. V-2184-1)



WESTINGHOUSE MODELS H-378T5, H-379T5, H-380T5, H-381T5 (Ch. V-2184-1)

WESTINGHOUSE MODEL H-381T5

TRADE NAME	Westinghouse Models H-378T5, H-379T5, H-380T5, H-381T5 (Ch. V-2184-1)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Sunbury, Pa.
TYPE SET	A C/ DC Operated Superheterodyne Receiver
TUBES (Five)	12BE6 Conv., 12BA6 IF Amp., 12AV6 Det-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to stator of antenna tuning capacitor. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output.
2.	"	"	1625KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. If range of A6 is insufficient, adjust trimmer at opposite end of stator plates.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL H-378T5

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	V-11611-1	PRS150/50-50		EDL5515		2N521	TVA-2453	Plain Orange
B	50	150								
C2	10000		R2CC63Z5Z103P	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C3	2000		R2CC63Z5Z202P	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C4A	220									
B	.002									
C	.005		♦V-10789-2		♦PC-150		♦1408-01		♦103C4	
D	250									
E										
C5	10000		R2CC63Z5Z103P	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C6	.047	400		489ZX-05		PJ4S47		PT4147	4TM-S47	Note 1
C7	.05	400	RCP10W4503M	P488-05		PTE4S5		PT415	4TM-S5	

Note 1. Some Models use .01MFD in this application (part #R2CC63Z5Z103P)
♦ Items C4A, C4B, C4C, C4D, C4E, R5A, R5B, R5C are combined in one unit.
When replacing items separately C4D and C4E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V-9993-7	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R2	22KΩ	½	RC20AE223M	BTS-22K	
R3	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R4	680Ω	½	RC20AE681M	BTS-680	
R5A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦V-10789-2	BTS-470K	
C	470KΩ	½		BTS-470K	

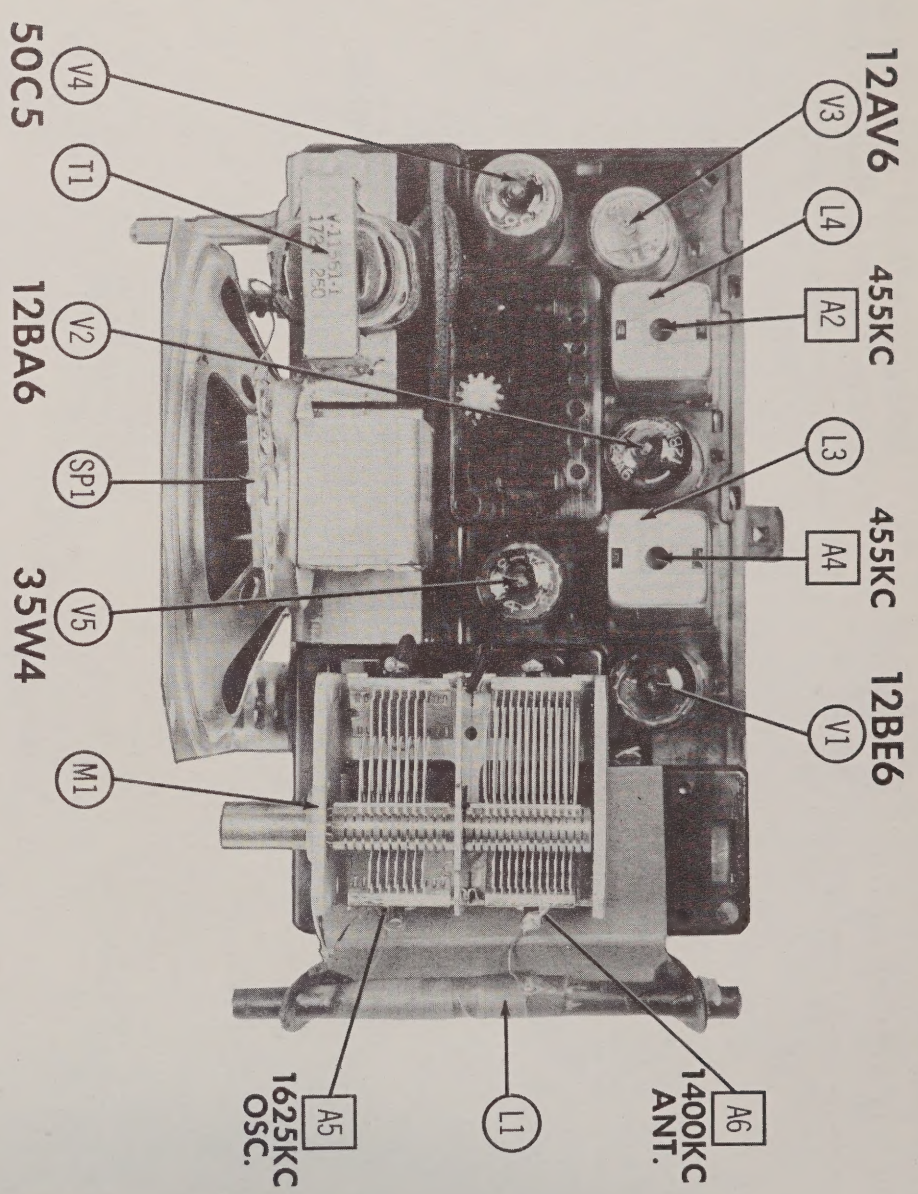
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R6	150Ω	½	RC20AE151M	BTS-150	
R7	1000Ω	1	RC30AE102M	BTA-1000	
R8	22Ω		V-6067-11		Note

Note. Not used in all models.
♦ Items R5A, R5B, R5C, C4A, C4B, C4C, C4D, C4E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.1KΩ	3.2Ω	225Ω	.6Ω	V-11561-1	A-3332	A-3025			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	V-11554-1	ST-113 Mod. P4-1	4A07	

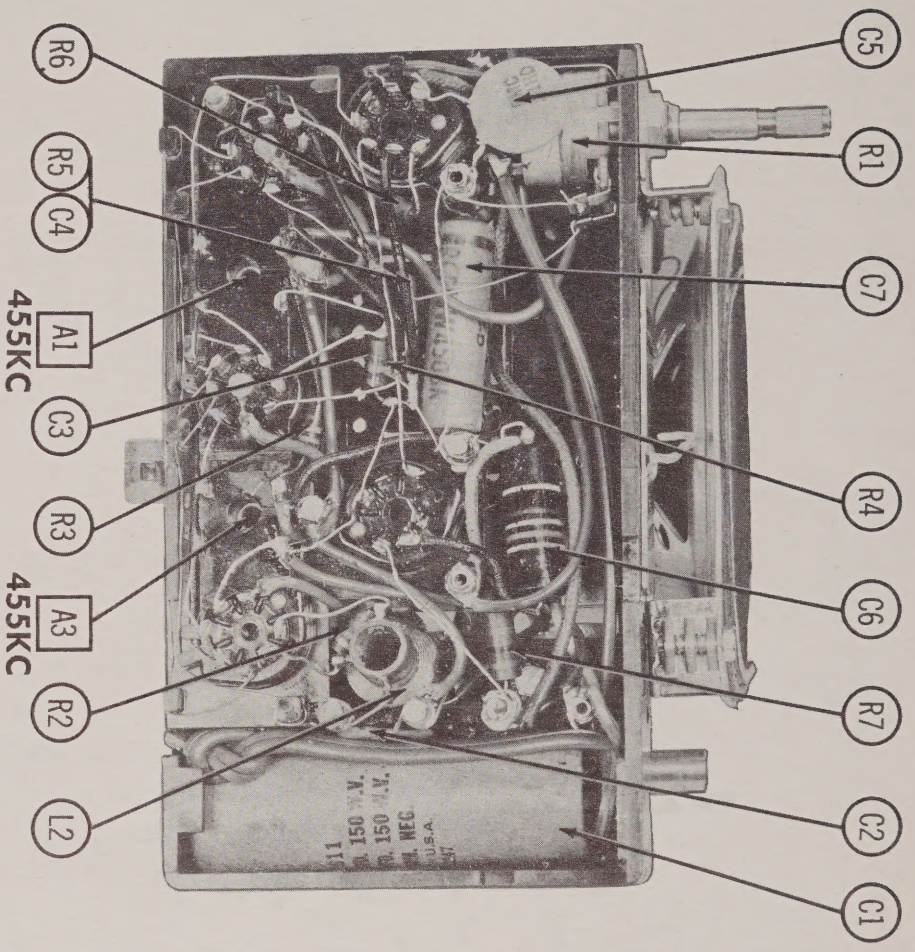
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.6Ω		V-11692-1				Westinghouse Part # includes R2
L2	Osc. Coil	1.2Ω	12.5Ω	V-11555-1				
L3	Input IF	16Ω	16Ω	V-11579-1	16-6758	BC-352	12-C1	
L4	Output IF	16Ω	16Ω	V-11579-1	16-6758	BC-353	12-C2	

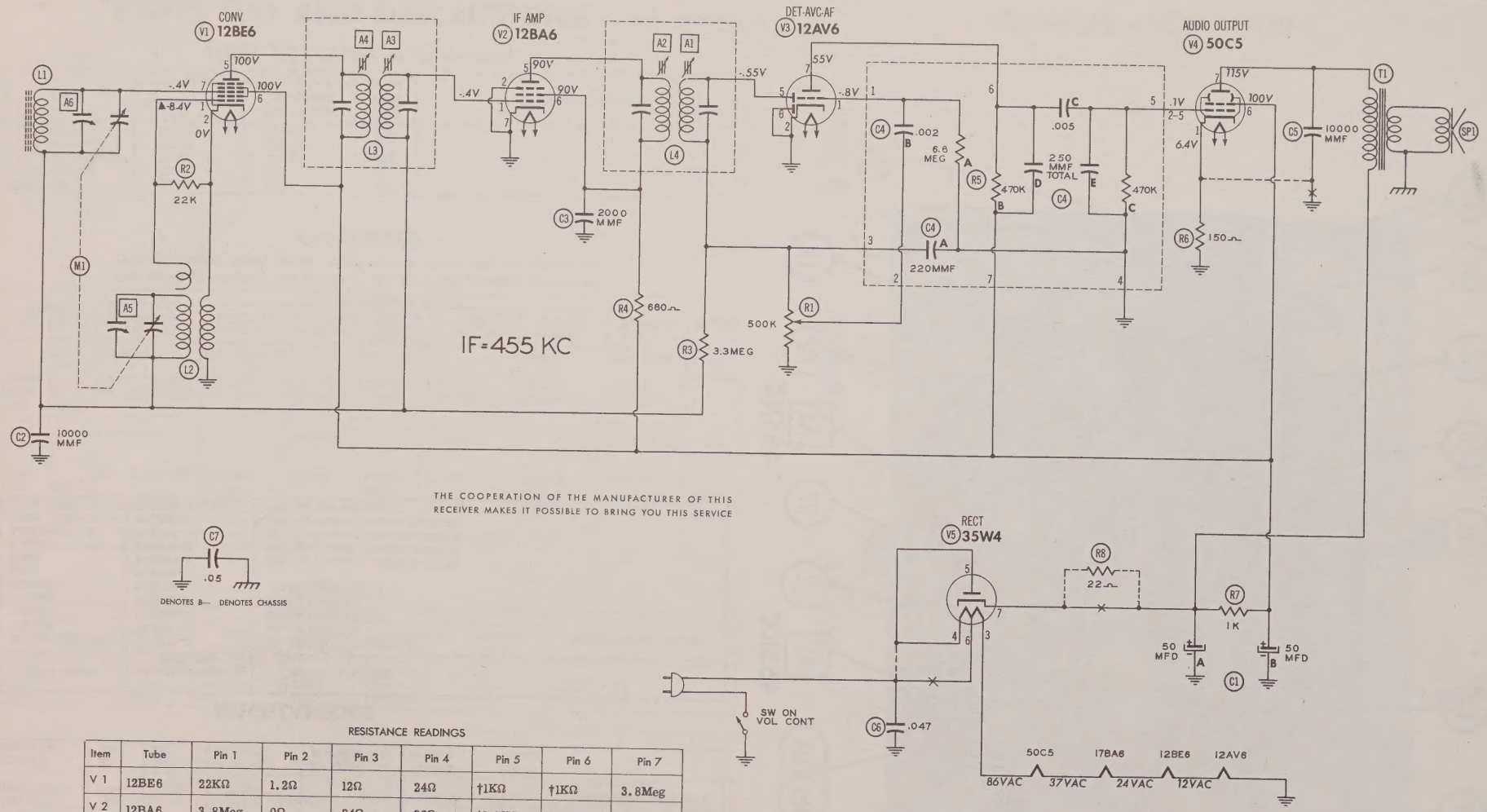
MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Capacitor	V-11277-3	37-405MMF, 17-110MMF
	Cabinet	V-1289-1	Model H-378T5
	Cabinet	V-1289-2	Model H-379T5
	Cabinet	V-1289-3	Model H-380T5
	Cabinet	V-1289-4	Model H-381T5
	Back	V-11591-1	
	Knob	V-11563-1	Off/On Volume, model H-378T5
	Knob	V-11563-2	Off/On Volume, Model H-379T5
	Knob	V-11563-3	Off/On Volume, Model H-380T5
	Knob	V-11563-4	Off/On Volume, Model H-381T5
	Knob	V-11562-2	Tuning (All Models)

CHASSIS—BOTTOM VIEW



WESTINGHOUSE MODEL H-378T5



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.2Ω	12Ω	24Ω	†1KΩ	†1KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1.7KΩ	†1.7KΩ	0Ω
V 3	12AV6	6.8Meg	0Ω	12Ω	0Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	85Ω	36Ω	470KΩ	†1KΩ	†225Ω
V 5	35W4	†1KΩ	INF	85Ω	120Ω	120Ω	114Ω	200KΩ

† MEASURED FROM PIN 7 OF V5.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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211-17

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5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.